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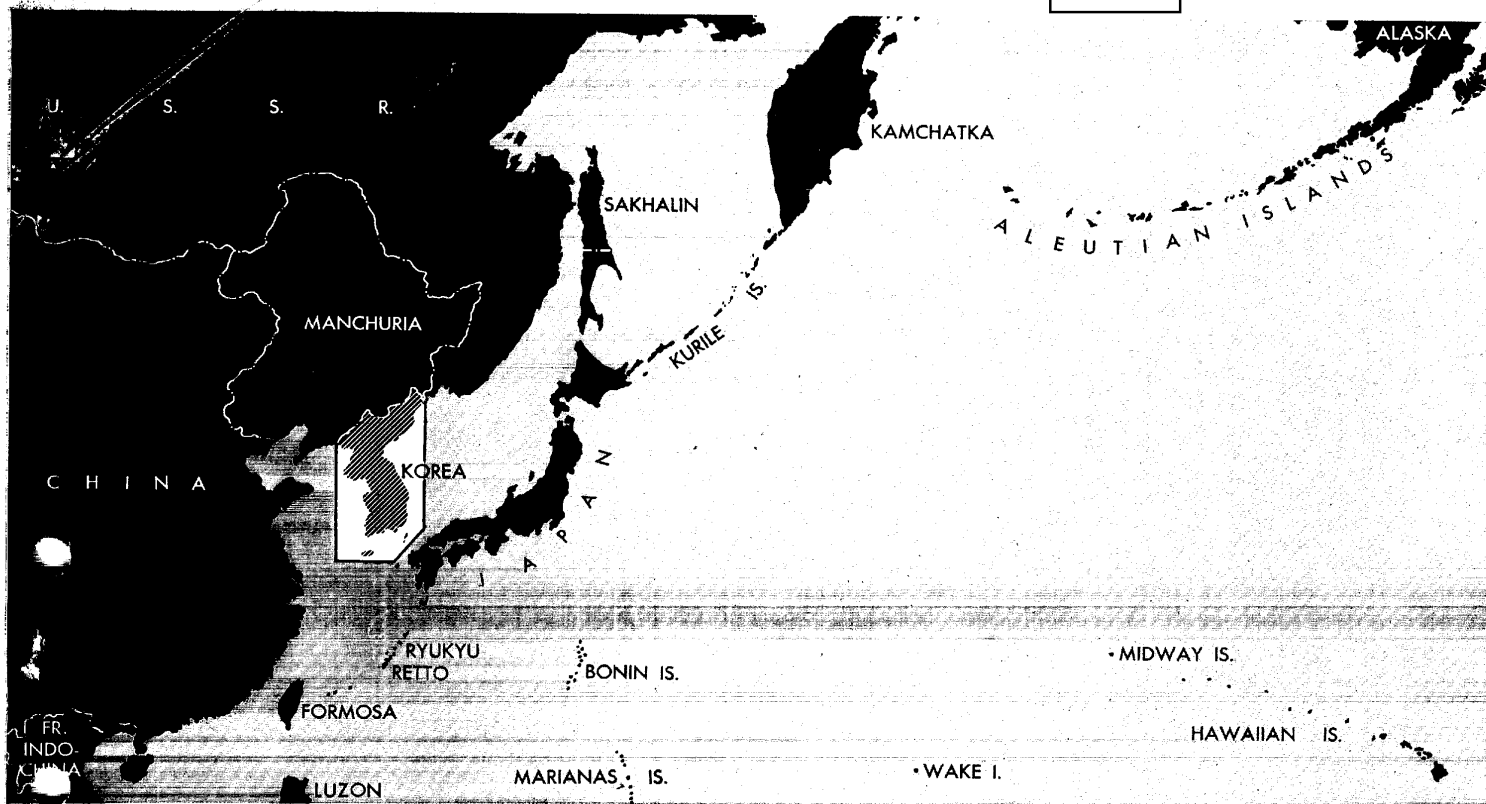
CHAPTER IV

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JOINT ARMY-NAVY INTELLIGENCE STUDY

OF

KOREA

(Including TSUSHIMA and QUELPART)

COASTS AND LANDING BEACHES

APRIL, 1945

List of Effective Pages, Chapter IV

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Chapter IV

Page IV - 1

COASTS AND LANDING BEACHES

40. Introduction

Depths in the offshore zone along the coast of Korea are very irregular; in general, bottom gradients range from steep to gentle along the east and south coasts, and from moderate to flat along the west coast. Numerous off-lying islands, islets, rocks, and shoals are present along the south coast and most of the west coast; bottom gradients around most of these islands and islets are steep to moderate. Drying tidal flats of mud or sand border much of Korea but are extensive only off the south and west coasts.

The east coast is fairly regular. Much of it consists of wide beaches fronting small river flats, and along several extensive stretches these beaches are nearly continuous (FIGURE IV - 176). The alluvial coasts alternate with stretches of cliffs and slopes which commonly rise directly from the water's edge; in places, however, particularly at the heads of the coves, the slopes are fronted by narrow beaches. On the east coast the beaches are exposed to heavy seasonal surf; few approaches are channeled; foreshore slopes average approximately 1 on 75; beaches average 75 to 100 feet wide; exits are onto river flats, which narrow and steepen inland, and which are flanked by steep hills or mountains.

Most of the inland terrain along the east coast consists of steep, rugged hills and high mountains. The coastal river flats terminate within a few miles inland at the mouths of narrow valleys or canyons. (FIGURE IV - 177)

The south and west coasts are extremely irregular, consisting of long peninsulas alternating with deeply indented bays. Many hilly or mountainous islands lie close to the shore. On the mainland, slopes or cliffs rise from the shoreline or from behind narrow beaches. Small pocket beaches usually are present at the heads of the coves. At intervals, particularly at the heads of the principal indentations, the slopes are interrupted by alluvial flats. These have low, level shores which may be muddy or may be fringed by sandy beaches. Along parts of the muddy stretches, earth embankments or salt pans lie behind the high tide line. On the south and west coasts, most beaches are protected from heavy surf; most approaches are channeled; foreshore slopes average 1 on 200 or flatter; drying tidal flats, composed of mud or sand, front almost all the beaches; the beaches average 25 to 50 feet wide, are backed by steep hill slopes or by narrow steep valleys, and are irregularly distributed. The inland terrain along the south and west coasts is similar to that on the east coast, except that the elevation of the mountains becomes progressively lower westward, and that the river flats extend farther inland. (FIGURE II - 82)

With the exception of Cheju-do, the shores of the larger off-lying islands are similar to those of the mainland. Cheju-do has a rocky coast composed mainly of low cliffs and slopes, with a few short, reef-fronted beaches. The coast is backed by a very rough-surfaced dissected lowland, from the surface of which rise small volcanic cones. The lowland merges inland into a high, rugged, volcanic range.

Vegetation on the hills and mountains of Korea consists mainly of conifers, brush, and grass; deciduous trees are

present in a few places, particularly on Cheju-do. The alluvial areas are intensively cultivated, chiefly in irrigated rice and grain; the lower, gentler hill slopes also are cultivated in some localities. Deciduous orchards commonly are present around the settlements.

Numerous villages, towns, and cities are located on the coastal flats. The principal towns and cities are served by improved highways or railroads, but the villages are connected only by unimproved roads or trails. On the east coast the main communications parallel the coast within a few miles, and the large cities are at or near the shore. On the south and west coasts the communications are far inland or skirt the heads of deeply indented bays; some of the chief cities are inland up the river valleys; the others are on the coast, but far from any suitable beaches, and are accessible only through winding channels.

The drying tidal flats that front many of the Korean beaches present major problems in landings because they must be crossed to attain the beach. Some of these flats are several miles wide; they consist of mud, muddy sand, sand, or pebbly sand, and in places grade from sand at the high water line to mud at the low water line. Between the mid-tide line and the low water line the flats are commonly soft; in some localities the soft areas may extend above the mid-tide line. Marshes, swamps, rice paddies, salt pans, irrigation canals, sand dunes, and steep slopes or cliffs that back some of the beaches are obstacles to exit from the beaches, particularly for mechanized vehicles. For most of the beaches little specific information on the details of tidal flats or of obstacles behind the beaches is now available, although adequate information on these topics is essential to proper planning of landings.

A. Regional subdivisions.

For convenience in description, the coast of Korea has been divided into four major sectors, as follows:

41. Tuman-gang (*Tōman-kō*, Tuman Ula) to Sungdu-mal (*Yōtō-matsu*, Harito Kutsu).
42. Sungdu-mal (*Yōtō-matsu*, Harito Kutsu) to Haenam-gak (*Kaiman-kaku*).
43. Haenam-gak (*Kaiman-kaku*) to Changsan-got (Chansan Kotsu).
44. Changsan-got (Chansan Kotsu) to Yalu River.

B. Maps, charts, and figures.

The positions of the coastal sectors and subsectors and of landing beaches within each subsector are shown on FIGURE IV - 176. The extent of the longer beaches is indicated by purple bands along the shore; short beaches, in general less than a mile long, are shown by purple dots. In many places, because of the small scale of the map and the small size of the beaches, a single dot represents more than one beach. The nine beaches that are described in detail in the text are designated by beach numbers enclosed in double circles. Beach areas considered most suitable for landings are marked by a star outside of the encircled number and a second purple line behind the most suitable stretch of beach.

PLANS 4 through 34 present in greater detail the distribution of landing beaches or landing areas. All landing beaches designated by encircled numbers on the PLANS are described briefly in tables in the text; the 9 beaches enclosed within boat-shaped pointers joined by a dashed line are described in detail. Beaches selected as most suitable for landing operations, on the basis of physical characteristics alone, are starred and the most suitable stretch of beach is marked by a double purple line.

FIGURE IV - 177 shows the distribution of coastal terrain types and offshore sand and mud flats.

PLAN 1 is a general reference map of Korea.

The text description of each subsector of the coast is accompanied by a strip map on a scale of 1:250,000. The first of these maps (FIGURE IV - 1) is compiled from Aviation Chart, U.S.H.O. V3-31; all succeeding strip maps are reproductions of parts of maps of the A.M.S. 1:250,000 series. Each map bears a number and letter corresponding to the sector and subsector; subdivisions within the subsector are numbered starting with 1 on each map. These numbered subdivisions correspond to text subdivisions introduced by centered boldface numbers.

Of the Korean 1:50,000 maps used in compiling the text, some of the older maps lack contours and show extremely generalized and inaccurate delineations of the coastline. The fact that adjacent sheets in both the older and newer maps do not always match suggests that unmapped strips may be present between them or that the mapping is inaccurate. Where the reliability of the 1:50,000 series is poor or questionable, or where coverage by this series is lacking, U.S.H.O. charts based upon Japanese hydrographic charts have been given preference in the description of the coasts.

Figures in this chapter include panoramic sketches of several selected beaches and coastal stretches. The beach sketches (FIGURES IV - 76 and IV - 77) were prepared from U.S.H.O. charts, A.M.S. maps, and air-photo coverage from medium altitude. Obliques and sea-level photographs were not available for the areas sketched. The general appearance of the mountains, their roundness, angularity, steepness of slopes, etc., is based in part on photographs taken in nearby areas, showing the skyline of the terrain from other directions.

The coastal sketches (FIGURES IV - 6, IV - 19, IV - 29, IV - 65, and IV - 74) are of areas where there is no air-photo coverage. In condensing a long strip of coast into a small page some of the features of the beaches and of the waterfront in general have been exaggerated in height to make them more apparent. Higher elevations have not been exaggerated.

C. Organization of text.

The coast is described in a clockwise direction, beginning at the northeastern extremity of Korea at the Siberian boundary. The landing beaches areas are numbered consecutively in clockwise direction; beach numbers are shown in circles on FIGURES and PLANS, but in the text are printed in boldface type enclosed in parentheses, as, beach area (16).

For each coastal sector the chapter presents, first, a brief summary of coasts and landing beaches within that sector, and second, a detailed description of coasts and landing beaches within each subsector. The outline for each subsector of the coast is as follows:

(1) Coast.

Detailed description of the coast and of the terrain immediately inland.

(2) Landing beaches.

(a) *Tabulated descriptions of each beach or group of beaches within the subsector.* In the tables, figures giving the width of beach and gradient of beach often denote only an order of magnitude; such approximations are necessary for areas where good source materials are lacking.

(b) *Detailed description of selected single beach or group of closely related beaches.*

1. LOCATION AND EXTENT. Includes size of beach and location with regard to landmarks and developed areas.

2. SEA APPROACH. Deals largely with area shoreward of 5-fathom line, bottom gradient, nearshore dangers, local conditions of wind, wave, and tide.

3. CHARACTER OF BEACH. General description of beach itself and its suitability for landings.

4. ADJACENT TERRAIN AND EXITS. Topography inland and on flanks of beach, communication routes, facilities.

D. Beach selection and description.

(1) Selection of described beaches.

The nine beaches described in detail in the text were chosen principally to show the best landing conditions near important objectives and to give a picture of typical landing conditions on various parts of the coast. Other criteria weighed in selecting beaches for description in the text were:

- Sea approach to the shore.
- Extent of the beach.
- Number and quality of the exits.
- Adjacent terrain.
- Road and railroad systems.
- Availability of radio, telegraph, and telephone communications.
- Proximity of important objectives, such as air strips, airfields, and large cities.

(2) Selection of most suitable beaches.

The beaches or beach areas that are marked, on FIGURE IV - 176 and on PLANS, with a star and a double line along the shore were chosen as most suitable for landing operations on the basis of their physical characteristics alone, and not because of proximity to important objectives or relative quality of the beaches in a given area. These beaches include approximately 10% of the total number of beach areas tabulated or described.

Beaches are classified as most suitable for landing operations, when they fall into that category during the greater part of the year. For example, seasonal variations in climate may cause local changes in the approach because of ice; and in the exits, because of flooding of rice fields during the summer and freezing of lagoons and swamps during the winter. Consequently, some beaches not shown as most suitable may become so for short periods of time; others may, for short periods, lose their suitability. There are likewise daily variations in beach suitability resulting from variations in tide, swell, and surf. Information on tide, swell, and surf will be found in Chapter III, on land use and soil trafficability in Chapter II.

The criteria used in selecting the most suitable beaches are:

(a) Approach.

1. No offshore dangers (islands, rocks, reefs, or sand bars) within 2 fathoms depth at lowest low water, and within 1,000 feet of any part of the beach.

2. Beach not fronted by a reef, a drying mud flat, a drying flat of unknown composition; nor by a drying sand flat over 700 feet wide.

3. Navigable approach to the beach nowhere less than 2,500 feet wide; nor does any continuous navigable channel have a ratio of average width to length of less than 0.5.

4. Three-fathom line nowhere more than 1,000 feet from shore at lowest low water. The bottom gradient within the 3-fathom line is approximately 1 on 60, or steeper.

(b) Exits. No obstacles within 1,500 feet of the beach (measured at right angles to the trend of the beach) which would bar vehicular progress inland. Such obstacles include:

1. Steep slopes (over 30%) of mountains, hills, cliffs, bluffs, and dunes.

2. Poor drainage associated with rivers, lakes, lagoons, swamps, and marshes.

3. Impassable vegetation throughout the year.

4. Artificial obstacles of a permanent nature.

(3) *Reliability of beach descriptions.*

The reliability of each beach description is stated in the heading relative to the following scale:

EXCELLENT—Aerial coverage available; excellent literature; good to excellent source maps; no factual conflicts.

GOOD—Aerial coverage optional; good literature; good source maps; few or no factual conflicts.

FAIR—No aerial coverage; fair to good literature; fair to good source maps.

POOR—No aerial coverage; literature poor; source maps indifferent.

In all beach descriptions some interpretation is necessary. With higher reliability ratings this generally involves only minor beach features, but in the lower ratings the facts are often so meager that interpretation involves some of the major beach features as well. This interpretation is in all instances made in accordance with established principles of beach mechanics.

The reliability of the beach data for the east coast is generally GOOD, while that of the south and west coasts is FAIR. The beaches on the south and west coasts are generally narrow above high water, with the consequence that there are numerous conflicts in source data concerning the location of the beaches. It is probable that especially in areas fronted by wide tidal flats more rather than fewer beaches are present than are shown on the PLANS. Areas of the PLANS from which contour lines are absent, as in the vicinity of Pusan and Wonsan, are restricted military areas. For these areas the data on adjacent terrain and exits is rated POOR.

(4) *Bottom gradient.*

In describing beach gradients and bottom slopes within the 30-foot depth off landing beaches the following standard descriptive terms are used:

STANDARD TERM FOR SLOPE	GRADIENT	DISTANCE FROM SHORE TO 30-FOOT DEPTH
<i>Steep</i>	Greater than 1 on 15	Less than 450 feet
<i>Moderate</i>	1 on 16 to 1 on 30	450 feet to 900 feet
<i>Gentle</i>	1 on 31 to 1 on 60	900 feet to 1,800 feet
<i>Mild</i>	1 on 61 to 1 on 120	1,800 feet to 3,600 feet
<i>Flat</i>	Smaller than 1 on 120	Greater than 3,600 feet

E. Navigational instructions.

For sailing directions and for information on approaches, anchorages, and dangers to navigation, the reader should consult U.S.H.O. Publication No. 122, *Sailing Directions for Siberia and Chosen*, 1932, with the latest supplement, and U.S. H.O. charts of the coast of Korea; all of the above publications are issued by the United States Hydrographic Office, Washington, D. C.

Port facilities and anchorages are described in Chapter VI and naval facilities in Chapter XIII.

F. Air facilities.

Places mentioned as airfields in Chapter IV are not necessarily classified as airfields in Chapter XIV, Air Facilities, which is concerned almost exclusively with fields suitable for military aircraft.

G. Distances and measurements.

In (1) *Coast*, distances across water, distances measured in a direct line between points on the coast, and distances indicating the length of shoreline between points on the coast are in nautical miles. Inland distances are in statute miles.

In (2) *Landing beaches*, all distances are in statute miles, and the length of the beaches described or tabulated is the total length of the beach following the configuration of the coast. These lengths, therefore, do not agree with beach lengths given under (1) *Coast*, which are measured in nautical miles, and may be either an approximation of the true length or the straight-line distance between the ends of the beach.

H. Positions of places.

In (1) *Coast*, positions of towns or other localities given in latitude and longitude were taken, in general, from the AMS 1:250,000 maps used as PLANS 4 through 34. Positions of features not designated on these PLANS were taken from U.S. H.O. charts or from Sailing Directions.

In (2) *Landing beaches*, the coordinates of beaches described in detail in the text are taken from hydrographic charts.

In the captions of FIGURES, coordinates are taken from the charts to which reference is made.

I. Names of places.

On PLANS 4 to 16 and 18 to 34, priority is given to Korean names, the forms of which are, with relatively few exceptions, correct; Japanese names, where inserted, are enclosed in parentheses, whether or not a Korean name precedes. On PLAN 17 (Tsushima), priority is given to Japanese names. The names on U.S.H.O. charts are, in general, based on Japanese forms, with the generic suffix treated as a separate word; some chart names, however, have their roots in Russian or other languages.

In the text, priority is given to authentic Korean names, whether or not these appear on plans. Where a Korean name on a plan differs substantially from the correct form given in the text, either the error is noted or the alternate name is inserted, in parentheses and in Roman type, after the correct name. Japanese names known to be authentic are set in *italic* type, and are added in parentheses except in rare instances

where no Korean name has been found*; where the correct Japanese form appears in parentheses on the plan, it is not always reproduced in the text. Names used on U.S.H.O. charts, if not confirmed from Japanese sources, are added in the text in parentheses and in Roman type, in exactly the form in which they appear on the charts. Thus the form "(San To)" indicates that the name is known only from a chart; if it were also known from a Japanese source, it would be printed "(San-tō)". In rare instances where no authentic Korean or Japanese names are known, the chart name has been given first priority.

On the plans, long and short forms of the vowels "o" and "u" are distinguished in transcriptions of Korean names by the use of a short mark ("breve"), and in transcriptions of Japanese names by the use of a long mark ("macron"). In the text, the long mark is used in printing Japanese names, but Korean names are, for typographical reasons, printed without the short mark.

Alternate names are not normally added after every repetition of a name within the same context. In the beach tables, alternate names are not normally given except where the preferred name is absent from the plan to which reference is made.

If variations are found between spellings of place names in the text and in FIGURES or PLANS, reference should be made to the Gazetteer (Chapter XV).

J. Glossary.

Generic terms relating to terrain, hydrographic, and political names have been left in the transliterated Korean and Japanese forms. English equivalents are listed below and also on PLANS 4 through 34.

KOREAN OR JAPANESE	ENGLISH	KOREAN OR JAPANESE	ENGLISH
-ak	point	-mal	point
-am	rock	-man	bay
-bong	mountain	-matsu	point
-chedo	archipelago	-misaki	point
-ch'on	river	-ni	village, town
-dae	mountain	-pando	peninsula
-dan	point	-p'o	harbor
-do	island, province	-pong	mountain
-dō	province, village	-rei	pass
-dong	village, town	-rettō	island chain
-gak	point	-ri	village, town
-gan	rock	-saki	point
-gang	river	-san	mountain
-gap	point	-sen	river
-gun	county	-shima	island
-guntō	archipelago	-sbo	island
-hae	sea	-shotō	archipelago
-hang	harbor, point	-sō	island
-hantō	peninsula	-su	river
-ho	lake	-sui	river
-kai	sea	-sudo	channel
-kaikyō	strait	-suidō	channel
-kaku	point	-tan	point
-kan	point	-to	island
-kang	river	-tō	island
-ko	lake	-tong	village, town
-kō	harbor, river, point	-uan	bay
-kun	county	-yolto	island chain
-kundo	archipelago	-zaki	point
-li	village, town	-zan	mountain

* A major exception is subsector 42 A (Tsushima), where Japanese names have been given first priority, as on PLAN 17, and have been set in Roman type.

41. Tuman-gang (Tōman-kō, Tuman Ula) to Sungdu-mal (Yōtō-matsu, Harito Kutsu)

(42°18'N, 130°41'E; 35°06'N, 129°07'E)

(PLANS 4 to 16; FIGURE IV - 176)

The east coast of Korea, over 600 miles in length, has generally clear water approaches, with only small islands close to the shore. A bank 12 miles off shore at 36°45'N (subsector M) is the only known danger outside the immediate offshore zone.

The bottom gradient is fairly steep except in the southernmost 40 miles. The steepest gradients occur at two short areas near the 38th and 41st parallels, where the 100-fathom line is 2½ to 3 miles off shore and the 10-fathom line is a few hundred yards or less. The general average for the 100-fathom line is around 8 miles off shore. Mud and sand form the bottom sediment, sand usually predominating in the indentations.

The prevailing winds on the east coast of Korea are of the monsoon type, blowing from the south and east during the summer, and from the northern quadrant in winter. Fog is common in the summer but even then does not occur more than 2 or 3 days per month. Storms are infrequent. Drift ice sometimes blocks parts of the shore during the winter months, and some of the more protected bays develop a thin sheet of ice at this time.

The shore is predominantly rugged, characterized by cliffs and steep rocky stretches alternating with short areas which are low and sandy. Indentations along the entire sector are small, with the exception of 23-mile-wide Kyongsong-man (Kyōjō-wan), two smaller bays at the head of Tongjoson-man (Chōsen-kaiwan, the Korean Gulf) and Yongil-man (Geijūsu-wan).

High mountains back this sector, the greatest altitudes, 5,000 to 6,000 feet, occurring less than 18 miles inland and even nearer the coast in the region of Songjin (Jōshin) and Yongdae-myōji (Ryūdai-byōchi). Mountains 2,000 to 4,000 feet high rise within some 10 miles of the sea along the entire sector. These mountains are furrowed by narrow, precipitous stream valleys. Near the coast some of the valleys widen into small alluvial or deltaic plains where rice and grain are cultivated.

Vegetation, with the exception of the cultivated grain, mainly rice, consists of wild grass, small reedy patches near marshes, scrub pine, and coniferous and broadleaf trees. These last three and wild grass grow on the hills and mountains as well as in the lowlands.

The northern part of the east coast of Korea, from the Siberian border to the city of Songjin (subsectors A to D), a distance of about 150 miles, is regular in broad outline, and in detail is made up chiefly of short bayhead beaches separated by rocky headlands. Kyongsong-man (Kyōjō-wan) is the only large indentation in the coast; it forms a shallow arc lined almost continuously with beaches. Beaches along this part of the coast vary in length from pocket beaches to strands more than 10 miles long. The shorter bayhead beaches are composed of sand and pebbles, and are 50 to 75 feet wide, with an average slope of 1 on 15. The longer bayhead beaches, and the long sweep of interrupted beach lining the shore of

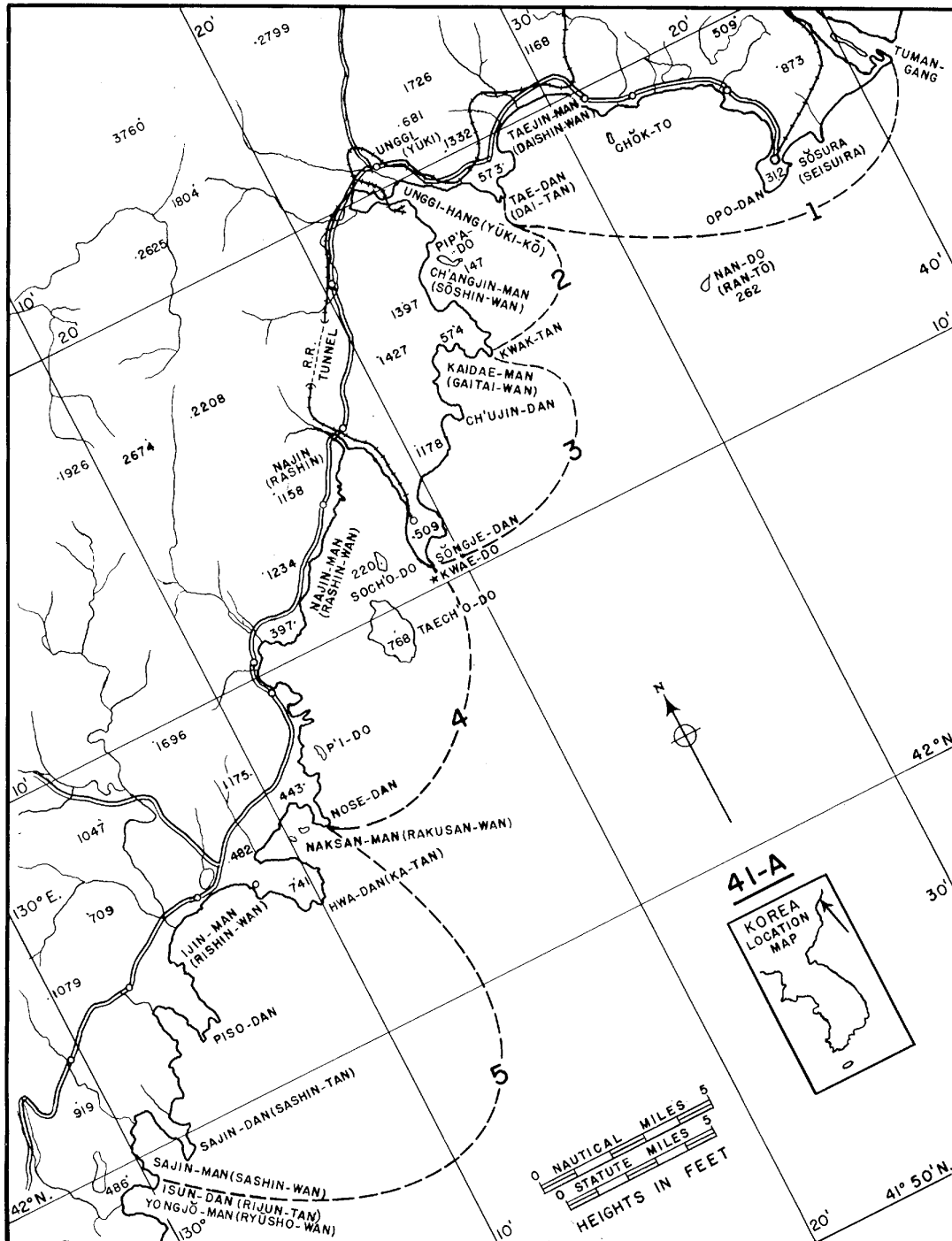


FIGURE IV - 1. Coastal subsector 41 A.
Beach areas are shown on PLAN 4.

Kyongsong-man, are sand, 75 to 150 feet wide, and have a slope of 1 on 20 to 1 on 30. The bottom slopes inside the 30-foot depth average 1 on 40. The longer beaches are generally free from nearshore dangers; many of the shorter ones are fronted by scattered rocks. Almost all of the beaches are exposed to the open sea. Surf is especially heavy on this northeast-southwest-trending coast with the prevailing east-quadrant winds of summer. The beaches generally border small sandy river plains which narrow rapidly inland and which are flanked and backed by rough barren hills and mountains. The river plains are partly barren and partly covered with dry crops. The few extensive areas of rice paddies are shown on the plans. Overland movement by vehicles is restricted to the river plains, which are separated by rough hills and mountains, cut only by narrow steep valleys. A railroad and a primary highway follow the coast and are generally accessible from the beaches, but on some stretches, notably between the southern end of Kyongsong-man and Songjin (subsectors C and D), they pass on the inland side of coastal hills or mountains.

The central east coast of Korea from Songjin (*Jōshin*) to Suwon-dan (*Suigen-tan*), a distance of about 190 miles, swings southwest, south, and then southeast to form a crescent opening to the east (subsectors E to I). The coastline shows many small irregularities, but only in the central part, in the vicinity of Yonghung-man (*Eikō-wan*), is it so deeply indented that there is good protection from the open sea. The shore is generally steep-to, free from islands, and is nearly continuously lined with beaches. Nearshore dangers are fairly common, in the form of scattered rocks, but they are nowhere a continuous obstruction. The beaches grade from pocket beaches less than 1 mile long to almost unbroken stretches 20 miles long lining gently curved coastal indentations. With the exception of the pocket beaches, some of which are pebbly, the beaches are all firm sand. The pocket beaches have slopes averaging about 1 on 15 to 1 on 20, the others from 1 on 25 to 1 on 30. The beaches average 100 to 125 feet in width. All the beaches are backed, within a few miles, by high mountains. In most places, a sandy coastal strip less than 1 mile wide lies between the beach and the steep slopes and narrow valleys inland; but near Iwon (*Rigen*), Sinch'ang (*Shimshō*) and Hamhung (Kōnan), river plains several miles wide at the shore extend 5 to 10 miles inland before the plain narrows to a canyon. The main east-coast highway and railroad are easily accessible from most of the beaches, often running on the back edge of the beach, but most of the beaches, or even parts of beaches, are isolated from each other in terms of inland movement.

The southern part of the east coast of Korea from Suwon-dan (*Suigen-tan*) to Sungdu-mal (*Yōtō-matsu*, Harito Kutsu), a distance of approximately 270 miles, is regular and monotonous, and is lined with almost continuous beach (subsectors J to P). The only important breaks in the coast are the bays Yongil-man (*Geijitsu-wan*) and Ulsan-man (*Urusan-wan*). There are a large number of small islands, all less than 1/2 mile in diameter, close in to the shore; and a single large mountainous island, Ullung-do (*Utsuryō-tō*, Matsu Shima, Dagelet Island), 19 miles in circumference, 78 miles off shore at 37°30'N, 130°52'E. The almost continuous beaches of this part of the coast are interrupted at short intervals by small rocky points and small cliffed capes. The individual beaches average 1 to 2 miles

in length; the 3 longest stretches, which have minor interruptions, are 14, 12, and 7 miles. The approach is clear to within a mile of the shore or less, but closer in there are many reefs, rocks, islets, and shoals obstructing most of the approaches. The beaches front a continuous belt of hills which rise, within a few miles inland, to rugged mountains. A few small river plains, almost all less than 2 miles wide and extending not more than 5 miles inland, back some of the beaches, but most of the beaches are backed within 1/2 mile or less by steep hill slopes. The beaches average 75 to 125 feet in width; they are chiefly firm sand, with a foreshore slope of approximately 1 on 20. Some of the smallest beaches are composed of sand and pebbles, or pebbles. The beaches, with the exception of those at the heads of the two major bays, are exposed to the open sea, and a moderate surf runs, which becomes heavy with east winds. The east coast road follows close to the shore, often running only a few hundred feet from the sea, except between Yongil-man (*Geijitsu-wan*) and Pusan (*Fusan*), where it is 5 to 15 miles inland. The railroad following much the same route is believed to be still under construction along the 100-mile stretch between Samch'ok (subsector L) and P'ohang-dong (subsector O).

A. Tuman-gang (*Tōman-kō*, Tuman Ula) to Isun-dan (Rijun Tan).

(42°18'N, 130°41'E; 41°59'N, 130°01'E)

(PLAN 4; FIGURE IV - 1; U.S.H.O. charts 1780, 3258, 5464, and V3-31)

(1) Coast.

High hills, more numerous in the southern portion, dominate this very irregular stretch of coast, and are backed by mountains 5 to 10 miles inland. Three large bays lie along this stretch—Chosan-man (*Zōzan-wan*), Najin-man (*Rashin-wan*, Rashin Ho), and Ijin-man (*Rishin-wan*), and there are several smaller indentations. The 10-fathom curve lies close to the shore; the 100-fathom curve is about 10 miles out. Some small islands obstruct the approach to the coast. Mud is the principal bottom sediment.

1*

The east bank of the Tuman-gang (*Tōman-kō*, Tuman Ula) (U.S.H.O. chart 3258) is a low, marshy, uncultivated plain upon which are scattered several small buildings. The river's west bank is low and marshy for a distance of about 1 mile from its mouth; above this point lies a chain of hills rising to more than 800 feet. During the winter the river is frozen for several months. Silt brought down during spring thaws and summer rains discolors the sea for a distance of 5 to 6 miles off the mouth of the river. Good landmarks are Ogarom-dan (*Ogaripao Tan*), 2 miles to the westward, and Opo-dan (*Uho-tan*) the headland terminating Sosura (*Seisuirā*) peninsula, 2 miles farther westward.

A sandy beach between the mouth of the Tuman-gang and Opo-dan (beach area (1),** TABLE IV - 1) is broken by light-

* Centered boldface numbers refer to coastal subdivisions numbered on strip maps, as on FIGURE IV - 1.

** Boldface numbers in parentheses refer to beaches or beach areas described in beach tables and keyed to circled numbers on PLANS 4 through 34.

colored cliffs on the eastern side of Ogarom-dan (inset on U.S.H.O. chart 3258) and at several places along the eastern side of the Sosura peninsula, the southern side of which is cliffy throughout. The cliffy places are fronted by off-lying rocks. High hills lie about ½ mile inland. Ogarom-dan (Ogaripao Tan) is the southern extremity of a cliffy projection and has the appearance of a castle; the point is therefore sometimes known as Castle Point.

The western side of the Sosura (*Seisura*) peninsula is fronted by off-lying rocks; cliffs lie at the southern and northern extremities. Immediately behind the shore the land is low and is marked by scattered deciduous trees. High hills lie about ½ mile farther inland. A rocky islet, Suk-kūn (Sokon), 26 feet high, is situated about ¼ mile west of the middle of the western side of the peninsula. Most of the northern side of the peninsula is fronted by the secondary port of Sosura (*Seisura*) (Chapter VI). Fairly good roads run northeastward and northwestward from the port; a single-track local railroad parallels the northeastward road for the first 4 miles. Opo-dan (*Uho-tan*) is the southwestern extremity of the peninsula; its southern face is a steep cliff rising eastward to 312 feet, and close southward is a rock 82 feet high.

The irregular shores of Chosan-man (*Zōzan-wan*) form coves which afford anchorages according to the direction of the wind. Nan-do (*Ran-tō*, Aru Somu), a small rocky island, 262 feet high, lies in the entrance to this bay (U.S.H.O. chart 3258); its shores are steep except at the northeast where a rocky ridge, with rocks above and below water, extends about ½ mile in a northeastward direction. Tongsuk-kun (Tonso-kun) and Sosuk-kun (Sosokun) mark the eastern and western ends of a rocky reef about 1¼ miles to the northward of Nando. Sosuk-kun, about ½ mile westward of Tongsuk-kun, is 28 feet high; Tongsuk-kun is 36 feet high and fairly steep-to. Other rocks, some of which dry, extend for about 500 yards to the eastward of Sosuk-kun. The eastern shore of Chosan-man faces on Sosura (*Seisura*) anchorage and is composed of a low sandy beach (beach area (2)), terminated by cliffs at its northern end and backed by low, uncultivated land except in the northern part where a ridge of cliffs extends northeastward. When seen from a distance the high peaks of this ridge appear like detached islands. On its northern and western sides, Chosan-man is backed at varying distances from the shore by a chain of high hills. A low sandy beach (beach area (2)) borders the northern side as far as the town of Unggi (*Yūki*) except where it is interrupted by several cliff-fringed promontories, the easternmost of which marks the western end of East Bay, and is a white cliff, 185 feet high. Behind the shore of East Bay the land is low and marshy and much of it is covered by large shallow brackish lagoons. The outlet of the lagoons is about 130 yards wide and is just northward of Hung-dan (*Kō-tan*), the eastern entrance point to East Bay. A village stands on the east side of the lagoon outlet. Chok-to (*Seki-tō*), a wooded islet 207 feet high, with abrupt and reddish-colored shores, lies about 1 mile south of the western end of East Bay; a reef, some of whose rocks are above water, one being 53 feet high, extends from the mainland almost to the northern end of this islet. Ok-am (Tama Pau), an isolated rock, lies about 1,600 yards southwestward of Chok-to. The sandy beach along the head of Taejin-man (*Daishin-wan*, Kunchin Wan), west of East Bay, is interrupted by the mouths of several small streams.

A fairly good road parallels the shore at a short distance; the railroad from Vladivostok reaches the coast at the east end of the beach, and recedes to about a mile behind the western end. A hill close to the shore in the central part has an elevation of 394 feet. Taejin-man is enclosed on the southwest by a broad hilly peninsula, on the southeast side of which is a small bight with a sandy beach at its head (beach area (3)). The southern extremity of the peninsula consists of 2 low rocky points with a small cove between them; from the western point a rocky reef extends southward about 600 yards.

2

Unggi-hang (*Yūki-kō*; inset on U.S.H.O. chart 3258) is the next indentation in Chosan-man (*Zōzan-wan*) to the west of Taejin-man (*Daishin-wan*); its shores are low, but are backed immediately inland by hills from which many short streams flow into the bay. Most of the small promontories along the shore are marked by cliffs and off-lying rocks. The railroad runs close behind the northern shore to the port and city of Unggi (*Yūki*) (Chapters VI and VIII) at the head of Unggi-hang. The southwestern corner of Unggi-hang forms Pip'a-hang (Mutine Bay), whose shore is composed of a sandy beach (beach area (3)) interrupted at a few places by streams. A village lies along most of the shore of Pip'a-hang. Close off the southern entrance point of Pip'a-hang lies the hilly island of Pip'a-do (*Biwa-tō*, Pipa Somu), the western end of which is connected to the mainland by a causeway of drying rocks. This island is about ¾ mile in length; its shores are low except for cliffs on two promontories in the southern part, and one patch of cliffs on its western side. Off-lying rocks front most of the island's shores.

Ch'angjin-man (*Sōshin-wan*) (U.S.H.O. chart 3258), the bay southwest of Pip'a-hang (Mutine Bay), is marked by a low coast backed by very high hills a short distance inland. A sandy beach extends along its northwestern shore, and there is a shorter stretch at the southern end (beach area (3)). Groups of offshore rocks lie in the northern and middle parts. The coast from the southern entrance point of Ch'angjin-man to Kwak-tan (*Kaku-tan*) is rockbound and mainly cliffy, but there is a short sand beach at the head of a bight close northward of the latter cape (beach area (3)).

3

Kwak-tan (*Kaku-tan*) is the southwestern entrance point of Chosan-man (*Zōzan-wan*); it is a flat-topped cliffy projection, 209 feet high. Close off its tip is a rock, 65 feet high. Behind this cape the land rises to a 568-foot summit 1 mile to the northward.

At the head of the small bay, Kaidae-man (*Gaitai-wan*, Mete Wan), a small rocky point, 233 feet high, divides the bay into two coves. The sandy beach of the northern cove (beach area (3)) is intersected by the mouths of several streams; a village stands at the west end of this cove. The shores of the southern cove are precipitous and irregular, except for a small sandy stretch in the northern part. A small islet about 100 feet high lies close off the point which separates the two coves. The remainder of the coast of this bay is generally cliffy, and high hills lie close behind the coast.

Ch'ujin-dan (*Shūshin-tan*), the southwestern entrance point of Kaidae-man (*Gaitai-wan*), is precipitous and steep-to; its

FIGURE IV - 2. East coast, Najin-man. (*Rashin-wan*, Rashin Ho). Beach area (4).

Panorama from SE (left) to SSW over town of Najin (*Rashin*), with canalized mouth of Najin-ch'on (*Rashin-sen*) on right. Center background, peninsula terminating in Songje-dan (Sonchon Tan, Jotei Tan); right background, Taech'o-do (*Daisō-tō*), with the smaller island of Soch'o-do (*Shōsō-tō*) in front of it. Photographs taken between 1933 and 1936, at an early stage in the development of the port; compare Chapter VI, FIGURE VI - 7. Approximate position 42°15'N, 130°18'E; U.S.H.O. chart 5464.

summit is 305 feet high. A small cove to the westward is bordered by patches of sand beach broken by cliffs (beach area 3)). Rocks lie off at places, and the terrain immediately back of the coast is hilly. A village lies at the head of this cove. Two small bays, separated by a cliff-fringed headland, lie southwestward of this cove, between it and Songje-dan (Sonchon Tan, Jotei Tan); the littoral of these two bays is similar to that of the cove just described, and each has a short sand beach at its head (beach area (3)). Songje-dan is an irregular rocky cape; a rocky reef extends about 300 yards eastward and southeastward from its extremity with a rock 49 feet high near its eastern end. Kwae-do (Keigan To), an islet 115 feet high, lies about 800 yards southward of Songje-dan.

4

Najin-man (*Rashin-wan*, Rashin Ho) (U.S.H.O. chart 5464) is enclosed by hills (FIGURE IV - 2). Along its shores are stretches of beach (beach area (4)), and cliffy stretches with off-lying rocks. The port and city of Najin (*Rashin*) (Chapters VI and VIII) lies at the bayhead, and the controlled channel of Najin-ch'on (*Rashin-sen*) runs into the bay beside the city. Villages and other settlements are scattered along the bayshores. Grassland and pine trees cover the hill slopes. The railroad from Unggi (*Yūki*), paralleled by a primary highway, reaches the coast at Najin; the highway continues along the coast from Najin to Ch'ongjin (*Seishin*), and it is thought probable that construction of a parallel railroad connecting these two ports has been completed.

Taech'o-do (*Daisō-tō*), a conical shaped island with a conspicuous wooded summit 764 feet high, lies in the entrance to Najin-man (FIGURE IV - 2). Its eastern shore consists of abrupt cliffs and steep rocky banks, but its northwestern and northern shores are low and sandy, and there is also a beach at the head of a bight on the southwestern side of the island (beach area (4)). There are seaplane facilities on the northwestern side of the island (Chapter XIV).

The smaller island Soch'o-do (*Shōsō-tō*) (FIGURE IV - 2) lies about $\frac{3}{8}$ mile northward of Taech'o-do; its eastern side is a steep cliff rising to a summit 220 feet high from which the land slopes down gradually to the northward and westward. There are beaches along the western shore and the northern part of the eastern shore.

Just southwest of Najin-man is Yujin-p'o (*Yushin-bo*), a small bay with 2 sandy bayheads (beach area (5)) separated

by a promontory off which lies an islet 56 feet high. Song-do (*Shō-tō*, Matsu Shima), an islet 92 feet high, lies close off the entrance to the bay. There are villages at the northern and southern ends of the southern bayhead. Sorumoku Tan, the southern entrance point of Yujin-p'o, is the northern end of a peninsula rising steeply to 233 feet, with a cliffy eastern shore. Its southernmost point is Shotogan Tan, the northern entrance point of a cove, Pangjin-man (*Hōshin-wan*); there is a sandy beach (beach area (5)) at the head of the cove, with a village at its northern end. A 2-pronged hilly promontory forms the south side of Pangjin-man. South of this stretches a long bay containing several sandy-edged bights. An island, P'i-do (*Hī-tō*), steep-to and 157 feet high, lies close off the center of the bay.

The bay just described terminates southward in a cliffy cape, Toseki Kumi, close southward of which is a similar cape; both are backed by a 440-foot hill. A spur of this hill runs southward to form the long, high peninsula which ends in Nose-dan (*Rōsei-tan*). Cliffs line most of the eastern shore of this peninsula and a conspicuous rock 95 feet high rises from the water about 600 yards eastward.

5

Naksan-man (*Rakusan-wan*) is an enclosed bay with mainly sandy shores (beach area (5)). High hills back the coast and 2 villages lie along the central and northern parts of the bayhead. The bay is divided by a pair of islands located near the center, which are connected with the bayhead shore by a shoal. A conspicuous islet with a pinnacle 92 feet high lies about 400 yards off the southwestern entrance point of Naksan-man.

A peninsula rising to a central 741-foot hill divides Naksan-man (*Rakusan-wan*) from the next bay, Ijin-man (*Rishin-wan*). Much of the east shore of the peninsula, including the promontory of Hwa-dan (*Ka-tan*), is cliffy, and rocks lie off shore, south and southwestward.

Ijin-man (*Rishin-wan*) is an open bay with sandy shores across the bayhead (beach area (6)) and hilly peninsulas along its sides. Grassland and pine trees cover the peninsula hills and the spurs behind the bayhead. A river mouth divides the beach of the northwest bayhead and rice paddies along the river valley inland. A large and a small lake lie behind the beach farther east. Here the coastal highway runs between the lakes and the shore. There are scattered dwellings about this bay, and

the village of Ijin-dong (*Rishin-dō*) lies north of Injin-dan (*Rishin-tan*), a point projecting from the northeast bayshore; this point has rocks off shore to a distance of about 800 yards. A rocky reef extends southward from two small points of land at about the center of the bayhead. The west shore (U.S.H.O. chart 1780) is formed by a peninsula whose rocky southeastern promontory is Piso-dan (*Hisho-tan*, Kanshoko Matsu).

Between Piso-dan and Sajin-dan (*Sashin-tan*) the coast has many small indentations, the largest being a narrow inlet running north on the west side of the peninsula terminating in Piso-dan; beaches border most of the shores of this inlet (beach area (7)). Grass- and pine-covered hills and scattered dwellings back this stretch of coast, from which the coastal highway recedes inland. A chain of hills runs south along the slender peninsula terminating in steep and rocky Sajin-dan (*Sashin-*

tan; inset on U.S.H.O. chart 5464). Off this point is a rocky reef, joining it to a white rock 82 feet high which lies 300 yards off the promontory.

Sajin-man (*Sashin-wan*), the next bay to the west, is surrounded by hills which are higher along its western shore. The shores of the bay are largely sandy, with some short rocky stretches. A beach (beach area (7)) behind a narrow tidal flat spans the bayhead, at the western end of which a stream empties into the bay. There are shoals off the central western shore; on the eastern shore, a little north of Sajin-dan (*Sashin-tan*), lies the village of Sajin-dong (*Sashin-dō*). Isun-dan (Rijun Tan), the western entrance point of the bay, terminates this subsector.

(2) Landing beaches.

TABLE IV - 1

LANDING BEACHES OF COASTAL SUBSECTOR 41 A Reliability GOOD. (PLAN 4)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(1) Tuman-gang mouth.	Generally clear; sandbars near river mouth.	17.5 mi., interrupted by river mouth and small cape.	100 to 150 ft.	1 on 20 or flatter.	Surf heavy; shore drift to N.	Firm sand.	Lagoon and swamp.	Road from Sosura follows W bank of river; trails through swamp E of river.
(2) Chosan-man; N shore.	Clear off beaches; rocks off capes; island off center.	9.5 mi., interrupted by small capes and lagoon outlets.	75 to 100 ft.	1 on 20 or flatter.	Surf heavy with SE or S winds.	Firm sand.	Hills back E and W parts of beach; lagoon and swamp in center.	Road backs entire beach; R.R. accessible from NW part.
(3) Chosan-man; W shore.	Generally clear; rocks off capes between beaches.	Short bayhead beaches; average length 0.3 mi.	50 to 75 ft.	1 on 15 or steeper.	Surf heavy with SE and S winds.	Sand and pebbles.	Narrow crescentic flats rising to high barren hills.	R.R. skirts shore near Unggi; highway and R.R. within 3 mi. of beaches to S, inferior road close to shore.
(4) Najin-man (FIGURE IV - 2)	Local foul areas; approach dominated by islands.	Total about 10 mi.; mainland beach interrupted by rocky stretches and harbor.	50 to 75 ft.	1 on 20 or steeper.	Surf light except with SE wind; island is protection.	Sand and pebble on sides; sand at head of bay.	Small river plain at head of bay; steep hills on sides.	R.R. on E; highway on W, probably now paralleled by R.R.
(5) Between Najin-man and Ijin-man.	Partly obstructed; several islands off shore.	Many pocket beaches; average length 0.3 mi.	50 to 75 ft.	1 on 20 or steeper.	Surf moderate, heavy with SE winds.	Sand and pebbles.	Narrow flats averaging 1,000 ft. in width, rising to mountains.	Highway and probable R.R. parallel shore within 1 mi.
(6) Ijin-man.	Partly obstructed.	4 mi., interrupted by 2 small rocky capes.	100 to 125 ft.	1 on 20 or flatter.	Surf heavy with S and SE winds.	Firm sand.	Hills on E; lake and narrow flat on N, backed by mountains.	Highway and probable R.R. parallel center and W part of beach area.
(7) Vicinity of Sojin-dan.	Partly obstructed.	Short curved beaches; average 0.5 mi.	50 to 75 ft.	1 on 15 or steeper.	Surf heavy.	Sand and pebbles.	Rough hilly peninsulas.	Poor trails lead over hills to coastal highway.

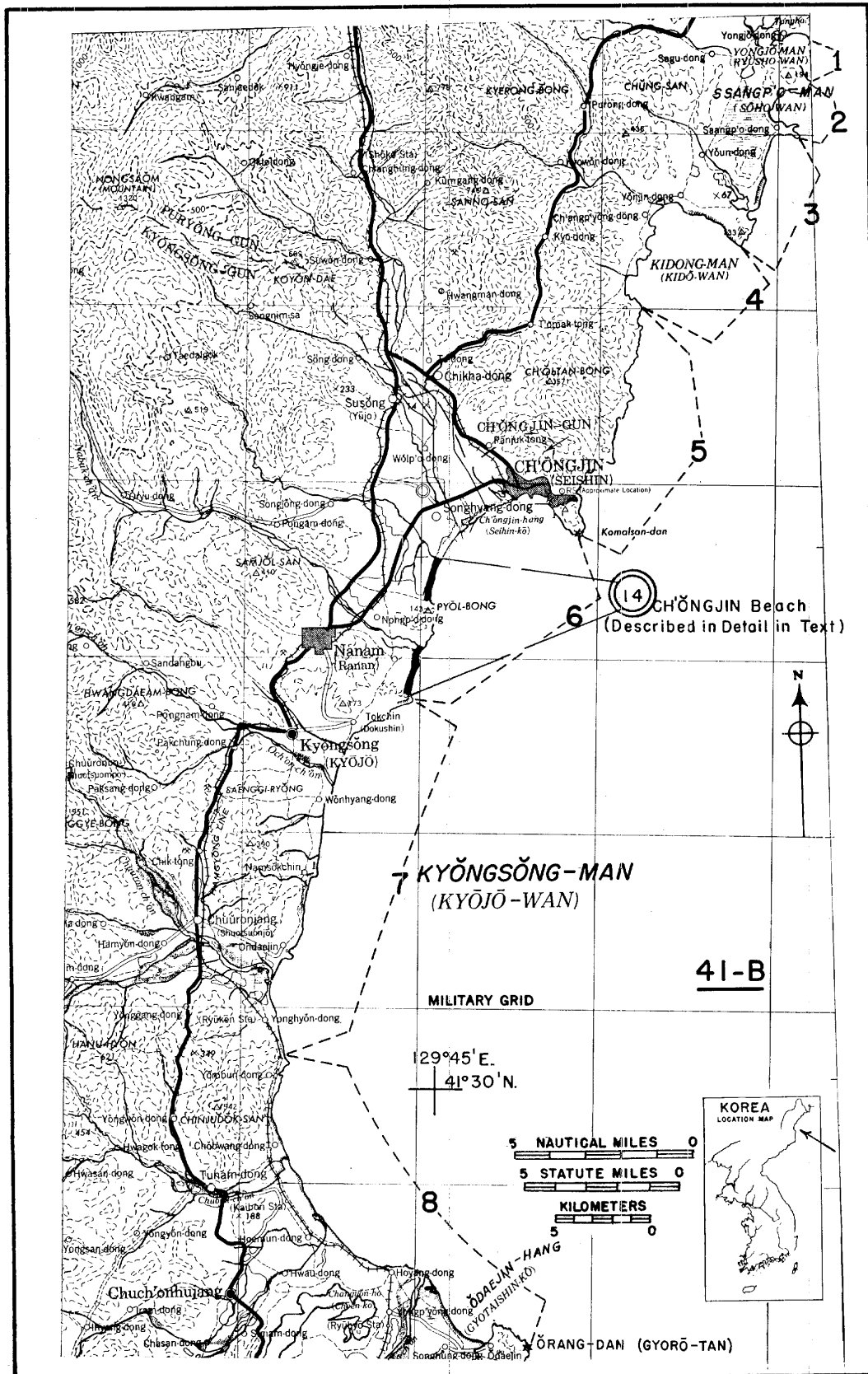


FIGURE IV - 3. Coastal subsector 41 B.
Beach areas are shown on PLAN 5.

B. Isun-dan (Rijun Tan) to Orang-dan (Gyorō-tan).

(41°59'N, 130°01'E; 41°23'N, 129°48'E)

(PLAN 5; FIGURE IV - 3; U.S.H.O. charts 3248 and 5464)

(1) Coast.

The coastline in this subsector has no deep indentations and there are few off-lying islands. The 10-fathom line is nowhere more than 1 mile off shore and in most places is at a lesser distance. The 100-fathom line averages 10 miles out, except in Kyongsong-man (*Kyōjō-wan*). Here this depth approaches within 2 miles of the shore near the Tokchin (*Dokushin*) anchorage and within one mile off the beach near the mouth of the Chuuron-ch'on (subdivision 7). Rocks lie close to shore near some of the headlands. The bottom sediment is largely mud. Cliffs, bluffs, and steep hills rise from the water's edge along most of the coast, although sandy stretches line parts of the bay-shores, generally near the outlets of rivers and streams. The coastal terrain is generally rugged, with hills and spurs rising inland toward a mountain chain that attains a maximum height of 7,500 feet some 23 miles inland. There are alluvial plains at the river mouths, in part cultivated in irrigated rice, in part uncultivated, with occasional growths of scrub pine. Wild grass and growths of scrub pine cover the foothills close to the sea, but the mountains farther inland carry abundant coniferous forests as well as broadleaf trees and grass.

1

Isun-dan (Rijun Tan), with a 308-foot hill near the water, is the easternmost point of a broad headland with cliffs on its southeastern side rising steeply to a summit of 308 feet; it forms the northern entrance point of Yongjo-man (*Ryūsho-wan*; inset on U.S.H.O. chart 5464). Within this bay, intermittent cliffs rise from the northern and southern shores, which are backed by hills rising 400 to 600 feet a short distance inland. The western shore is composed of a sandy beach (beach area (8), TABLE IV - 2) fronted by a narrow sand flat. Two small fishing villages, Yongjo-dong (*Ryūsho*) and Samilp'o (Sanjitsuho) lie just north of the mouth of the river Pugo-ch'on (*Fukyo-sen*) at the bayhead, and are separated by a small lagoon. North of this lagoon are two small lakes. Across the river southward is a third lake with a stream outlet into the river. Narrow alluvial plains, where rice is cultivated, border the river and its two tributaries for a few miles inland. Kwac-do (*Kei-tō*), a cliffy islet, 50 feet high, lies in the middle of Yongjo-man; shoal water borders the southern side of the islet. Rocks lie off the southern entrance point of Yongjo-man.

2

A grass-covered promontory, 627 feet high near its center, separates Yongjo-man (*Ryūsho-wan*) from Ssangp'o-man (*Sōho-wan*). This promontory has steep slopes and an intermittent fringe of cliffs at the water's edge, particularly along its southeast extremity. There are rocks off shore, northeastward.

Ssangp'o-man, roughly the same size as Yongjo-man to the north, has cliffs on the northern and southern shores and two sandy stretches (beach area (9)). The shorter stretch curves at the mouth of a ravine at the north end of the bayhead. The longer stretch borders the southwest shore of the bay and is backed by marshland, which is divided about ¼ mile inland by a spur of low hills extending westward. Reeds cover some areas inland from the marshes. A village lies at the head of the bay, and a larger village lies on the cape along the south shore.

The cape forming the south shore of Ssangp'o-man extends seaward in two long cliffy points. Offshore of the northern point are rocks north and east, and the cliffs on the southern point, Sulbong-dan (Surupon Kutsu), are marked by a hole at their outer end. A conical hill rises midway across the base of this cape and wild grass, with some wooded patches, covers the whole area.

3

Cliffs line the south side of Sulbong-dan (Haeishiru Kutchi; U.S.H.O. chart 3248), and are succeeded westward by intermittent cliffs and sandy stretches. A beach (beach area (9)), which starts near the base of the cape, curves southward for 1½ miles and is broken at one point by rock outcroppings backed by low hills. A small lake lies less than ¼ mile inland and a trail parallels the shore, skirting the top of an embankment which backs the southernmost part of the sandy stretch.

Grass and a few scrub pines cover the hills behind the sandy stretch, and reedy areas interspersed with swamps fill the bottom lands.

About 1½ miles of high cliffs line the coast southward from the end of this sandy stretch. Patches of rock are off shore at the foot of the cliffs, and grass-covered hills attaining heights of 371 and 334 feet back the cliffs close to the shore, the higher hill rising to the north.

At the southern termination of the cliffy stretch is a small, rounded bay with sandy shores (beach area (10)) and some houses along the bayhead. A lake, slightly larger in area than the bay, lies close inland and drains into the bay. Two streams, flowing southeastward through narrow bottom land, empty into the lake on its north side, and a settlement is scattered along portions of the valley where trails criss-cross.

The termination of this stretch is Kal-tan (Katsu Tan), sloping steeply to the rocky shore from an elevation of 437 feet.

4

Kidong-man (*Kidō-wan*) is an open bay, the west shore of which contains four smaller bights. The eastern part of the north shore of Kidong-man is composed of crumbling cliffs fronted by a narrow pebbly beach (beach area (11)) and backed by a low, reedy area. This low area extends west of the hill on Kal-tan (Katsu Tan), which is covered with grass and a few trees.

A sandy stretch (beach area (11)) borders the northwestern bayhead of Kidong-man; it is backed by a valley winding inland to the west between high hills. Several small ponds lie close behind the beach. There is a village at each end of the sandy shore and a third 1½ miles inland. Trails join them and lead inland.

A rocky headland is the southwestern limit of the sandy stretch described above. Two similar headlands, with short sandy stretches (beach area (12)) at the heads of the intervening bights, lie to southward. The northern of the two beaches has a small lowland pocket behind it, bounded on the north by a bluff. Trails cross the lowland, among scattered dwellings.

The southernmost of the three headlands mentioned above forms the north entrance point of a semi-circular bight whose southern entrance point is Myonsan Kutchi, also the southern entrance point of Kidong-man. At the head of this bight is

a beach (beach area (12)) backed by gradually rising hills. A trail parallels the shore at the foot of the hills. Houses are scattered back of the beach and inland along a small valley.

Backing the entire western shore of Kidong-man a chain of mountains parallels the coast less than 3 miles inland.

5

Myonsan Kutchi is the northern point of a rough stretch of coast which rises to a 1,476-foot mountain slightly over a mile inland. Cliffs backed by steep hills line almost the entire stretch of shore. Off Myonsan Kutchi a rocky reef extends seaward and rocky islets lie close to shore farther south. At the southern end of this irregular coast cliffs give way to a sandy stretch (beach area (13)) along a bight where a stream empties into the sea. A few dwellings are located here and a trail from inland turns south along the beach, then ascends the slope of the next hill southward, continuing close to shore as far as the port of Ch'ongjin (*Seishin*).

Southward from the bight just described, the coast, as far as the end of subdivision 5, is characterized by cliffs and rocky stretches alternating with beaches (beach area (13)) which occur in the small bayheads. Rocks and islets lie close off shore, particularly along the southern half. Two small valleys run down to the shore, each with a trail leading inland, a village near the shore, and a sandy beach.

The city of Ch'ongjin (*Seishin*) (Chapter VIII), on the north shore of Kyongsong-man (*Kyōjō-wan*), extends across the base of the peninsula protecting the harbor to a small bay on the east shore of the peninsula, with a beach at its head (beach area (13)). Cliffs edge most of the peninsula, which terminates in a rocky point, Komalsan-dan (*Kōmatsusan-tan*, Komarusan Kutchi), and rises to a hill 594 feet high near its center (FIGURE IV - 4). Pines and deciduous trees cover the slopes.

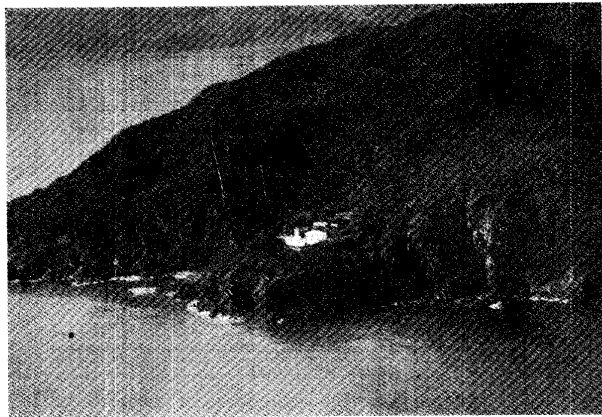


FIGURE IV - 4. East coast. Kyongsong-man (*Kyōjō-wan*). Komalsan-dan (*Kōmatsusan-tan*, Komarusan Kutchi).

View northwestward toward lighthouse on Komalsan-dan, southern tip of peninsula southeast of Ch'ongjin (*Seishin*). Left background, Ch'ongjin-hang (*Seishin-kō*), harbor at north end of Kyongsong-man.

Approximate position 41°45'30"N, 129°51'E; U.S.H.O. chart 3248 (inset).

6

Kyongsong-man (*Kyōjō-wan*), which covers subdivisions 6, 7 and 8, has a principal port, Ch'ongjin (*Seishin*), at its north-

ern end, a secondary port, Odaejin-hang (*Gyotaishin-kō*), at its southern end, and three anchorages (Chapter VI).

Sandy stretches and tidal flats border most of the shore. Cliffs, bluffs, and rocky stretches edge the water at other places, backed by spurs which rise inland toward a chain of mountains surrounding the bay.

Six alluvial plains follow the courses of rivers and streams which empty into Kyongsong-man at almost equal intervals. The valleys of the Susong-ch'on (*Yujō-sen*) in the north plain and the Orang-ch'on in the south plain are routes for the one-track railroad which leads north to Manchuria, south to Wonsan (*Genzan*) and other Korean centers. Towns and villages with good road connections are scattered along this bayside and a primary highway parallels the shore 1 to 4 miles inland.

The plains, which narrow into stream valleys a few miles inland, have areas of cultivated rice, wild grass and scrub pine; conifers, broadleaf trees, and wild grass cover the encircling mountains.

Subdivision 6 (FIGURE IV - 5) consists of the port area of Ch'ongjin (*Seishin*) (Chapter VI) and 2 good sand beaches separated by a short stretch of hilly shore. The beaches and adjacent terrain are described in detail as beach area (14). There is also a narrow beach along the peninsula shore south-east of the port, which is included in beach area (13).

7

The shore of this subdivision consists of almost continuous sandy beach (beach area (15)), interrupted only by occasional rocky points and by river mouths. The rocky point which terminates beach area (14) is succeeded down the coast by two more at almost 1-mile intervals. Cliffs and rocky shoals edge the points, but the southern two have a small beach and village on the north shore of each. Hills back this stretch, and roads lead inland from both villages.

Beyond the southern rocky point lies the Tokchin (*Dokushin*) anchorage, headed by an open baylet facing south, on the shore of which is a village of the same name. There are two shoals off shore near Tokchin, but the 100-fathom curve is only 2 to 3 miles out.

From Tokchin a 2-mile sandy stretch extends to the mouth of a river, the Och'on-ch'on. Back of the beach a plain opens inland 1½ miles to the town of Kyongsong (*Kyōjō*), where it merges around the town into two valleys, one trending west along the Och'on-ch'on, the other northwest along a smaller stream. A chain of hills starts behind the town, rising westward into mountains. Numerous roads and trails criss-cross the valley, where there is some rice cultivation. Southward to the plain of the Chuuron-ch'on the coast consists of a chain of beaches interrupted by occasional rocks and cliffs and backed by hills; the highest and most conspicuous is Yondae-bong (Yonde Pon), which reaches 1,279 feet about 2 miles inland. The hills recede somewhat behind the northern half of this stretch, but behind the southern half they rise close to the water. Several villages adjoin the shore and a trail connects them.

The valley of the Chuuron-ch'on backs the next stretch of beach, which begins on the south side of a rocky promontory and extends about 3 miles to the next rocky point (FIGURE IV - 6). This valley, which branches into 4 valleys a few miles inland, is in part planted to irrigated rice and in part consists of uncultivated sandy areas. There are several scattered villages.

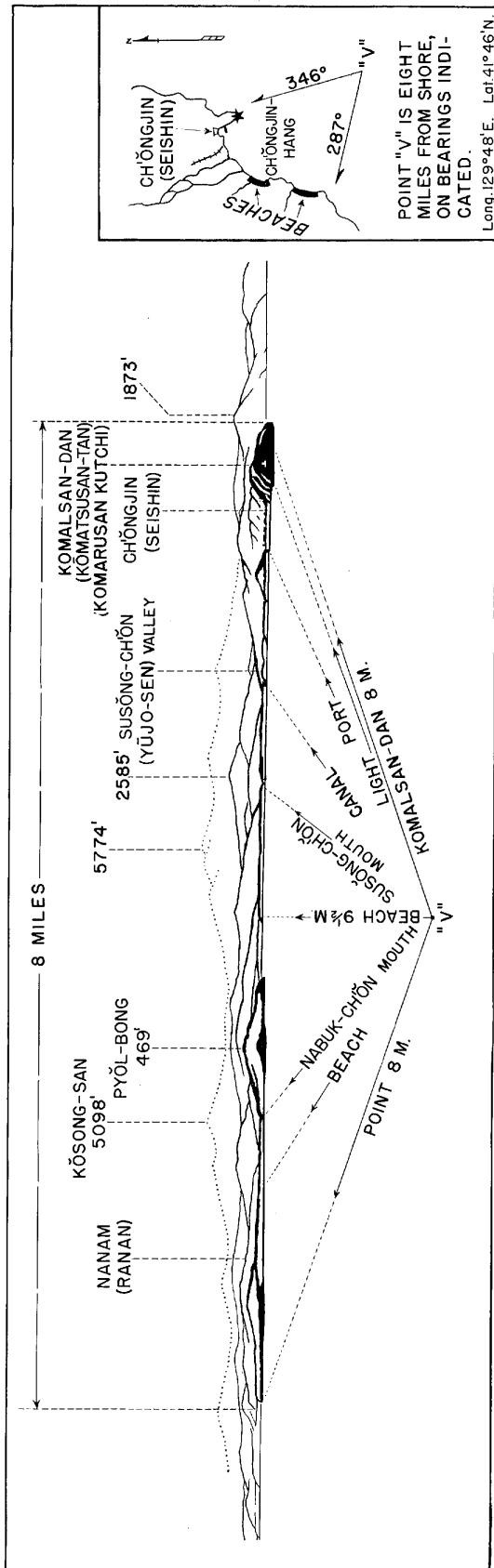


FIGURE IV - 5. East coast, Kyongsong-man (Kyōjō-wan). Beach areas (13) and (14). Panoramic sketch of the northern part of Kyongsong-man. Approximate position of Komalsan-dan, 41°45'30"N, 129°51'E; U.S.H.O. chart 3248.

The town of Chuuronjang is at a multiple road junction 2½ miles inland, where the railroad has a station. Immediately south of the town, two bridges cross the Chuuron-ch'on, one for the highway, one for the railroad, which then runs shoreward along the south side of the valley.

8

This section of Kyongsong-man (Kyōjō-wan) consists of extensive sandy stretches (beach area (16)), but begins at the north with about 1½ miles of rocky, irregular coast. High hills, covered with scrub pine and grass, rise behind this stretch to a chain of mountains, which reach a height of 1,778 feet only 1½ miles inland. At the beginning of subdivision 8 the railroad enters a tunnel close to the shore. There is a break in the tunnel behind the head of a small cove fronting the village of Yambun-dong (FIGURE IV - 7); about a mile south of the break it terminates near the north end of a long beach. From this point the railroad runs close to the beach on fills, then diverges from the shore as the beach widens.

The sandy stretch continues southeast to Odaejin-hang (Gyotaisbin-kō), uninterrupted except at the mouth of the Orang-ch'on, where low rocky points and a stretch of bluff edge the water.

The mountains noted above continue southward, but recede from the coast, to end abruptly at a valley which has two streams running eastward into the sea. The streams flow into a single small lagoon on the beach, with an outlet eastward.

The valley having the two streams is divided from a broader valley to the south by a chain of high hills ending in a spur ¾ mile from the water. Villages, among scrub pine trees and other conifers, are scattered along the low area behind the beach. The railroad, paralleled by a road or trail, continues along the coastal plain.

The second and broader valley follows a stream which flows into a slender lagoon behind the beach; the outlet is near the southern end of the lagoon. This valley, like the narrower one preceding, has rice paddies and villages.

Southeastward of these valleys, hills covered with coniferous trees closely back the beach, almost to the mouth of the Orang-ch'on. Inland among these hills is a winding lake.

The valley of the Orang-ch'on is about a mile wide, with bluffs edging the river inland. Silt flats and rice paddies alternate with pine-covered slopes along the valley.

Southeast of the river mouth the bluff shore gives way to another sandy stretch which terminates at the small port of Odaejin-hang (Gyotaisbin-kō) (Chapter VI); several piers interrupt the beach west of the small enclosed harbor, which lies at the foot of steep hills (inset on U.S.H.O. chart 3248).

Orang-dan (Gyorō-tan), the southern entrance point of Kyongsong-man (Kyōjō-wan), is steep and rocky. A sharp peak 400 feet high rises behind it, and close off shore is a 48-foot pinnacle rock.

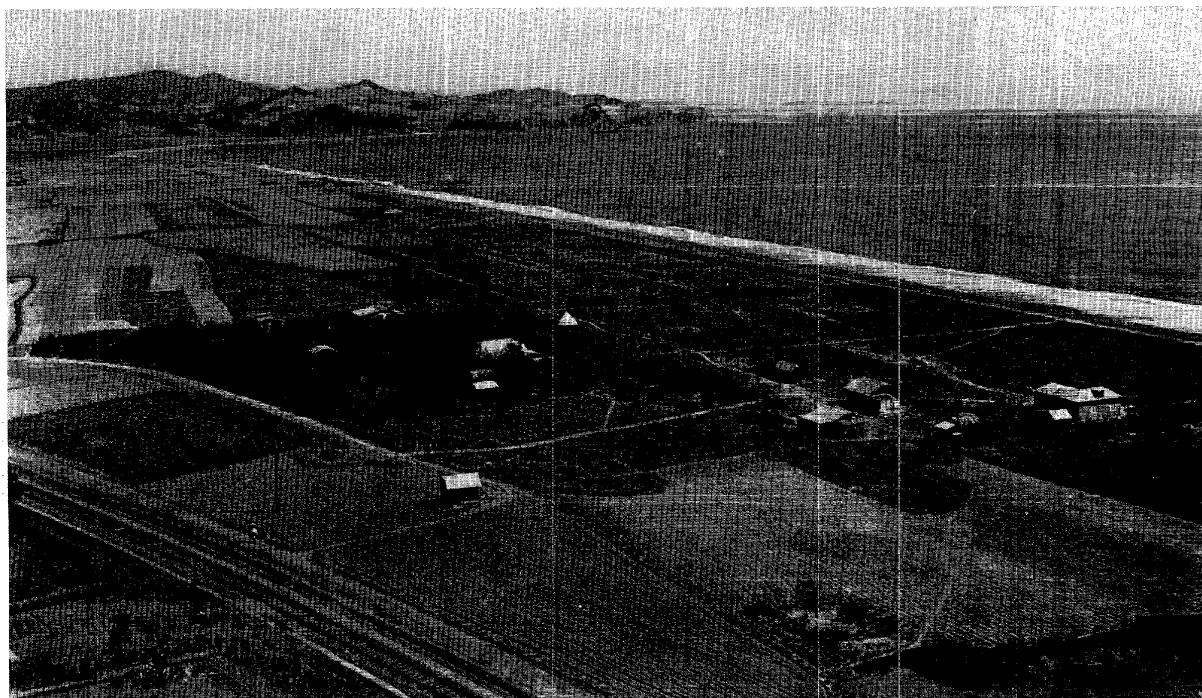


FIGURE IV - 6. *East coast, Kyongsong-man (Kyōjō-wan)*. Beach area (15). View north-northeastward along central part of Kyongsong-man. Alluvial plain of river Chuuron-ch'on in foreground; river mouth in left middleground, at deepest indentation. Note wide beach with low slope. View is taken from close above northern exit of railroad tunnel. Before 1940. Approximate position $41^{\circ}32'N$, $129^{\circ}39'E$; U.S.H.O. chart 3248.



FIGURE IV - 7. *East coast, Kyongsong-man (Kyōjō-wan)*. Beach area (16). View south-southeastward across cove fronting village of Yambun-dong. Note break in railroad tunnel. Before 1940. Approximate position $41^{\circ}31'N$, $129^{\circ}39'E$; U.S.H.O. chart 3248.

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(2) Landing beaches.

(a) General.

TABLE IV - 2

LANDING BEACHES OF COASTAL SUBSECTOR 41 B

Reliability GOOD. (PLAN 5)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(8) Yongjo-man.	Bottom flat; island 0.5 mi. off center.	0.6 mi.	100 to 125 ft.	1 on 20 or flatter.	Surf heavy with E quadrant winds.	Firm sand.	Small flat isolated by hills and river.	Trails connect to highway 3 mi. inland.
(9) Vicinity of Ssangp'o-dong.	Obstructed by shoal water and rocks.	4.2 mi., interrupted by cape in center, rocky shore in N.	50 to 75 ft.	1 on 20 or steeper.	Surf heavy with E quadrant winds.	Firm sand.	Flanked by hills on N and S, by small swampy flat in center.	Poor trails over rough hills to highway 6 mi. inland.
(10) Small cove NE of Kidong-man.	Obstructed by rocky shoal.	0.3 mi., interrupted by lake outlet.	50 to 75 ft.	1 on 20.	Surf heavy with E quadrant winds.	Firm sand.	Flanked by hills on N and S, by lake in center.	Trails to highway 6 mi. inland.
(11) Kidong-man; N shore.	Partly obstructed by rock off center of beaches.	2 beaches; E beach 1.5 mi., W beach 1.7 mi.	E beach 25 to 50 ft.; W 50 to 75 ft.	E 1 on 10, W 1 on 20.	Surf heavy with S and SE winds.	E beach pebbles and cobbles, W beach sand.	E beach backed by steep bouldery slope to low terrace top; W beach by narrow lowland.	Trails to highway 3 mi. inland of W end.
(12) Kidong-man; W shore.	Generally clear.	3 pocket beaches; average 0.4 mi.	25 to 50 ft.	1 on 10 to 1 on 20.	Surf heavy.	Sand and pebbles.	Small lowland pockets rising to rough hills which begin 1,000 ft. inland; beaches flanked by hilly headlands.	Trails through ravines to highway 3 mi. inland.
(13) Between Kidong-man and Ch'ongjin.	Steep-to; scattered rocks.	4 pocket beaches, 0.1 to 0.3 mi.; also 0.8 mi. strip beach on W side of peninsula.	25 to 50 ft.	1 on 15.	Surf heavy.	Sand and pebbles.	3 N beaches backed by steep valleys in mountains, 4th beach by low pass across peninsula, last beach by steep slopes of peninsula.	3 N beaches isolated except for trails; 4th beach on E edge of Ch'ongjin; road to city from N end of beach on W shore of peninsula.
(14) SW of Ch'ongjin. (FIGURE IV - 5) (See also (b) below.)	Generally clear; harbor of Ch'ongjin at N end.	2 beaches, 1.1 and 1.5 mi., separated by rocky stretch; stream mouth at N end of each.	150 to 200 ft.	1 on 20 or flatter.	Surf heavy.	Sand; firm except near stream mouths.	Alluvial flat in rice behind N beach; grassy valley behind S beach.	Highway and R.R. 1½ to 2 mi. inland of both beaches.
(15) Vicinity of Kyongsong. (FIGURE IV - 6)	Generally clear.	12 mi., interrupted by rivers and short cliffed capes.	100 to 125 ft.	1 on 20.	Surf heavy.	Sand; firm except near river mouths.	S 3 mi. and 2 mi. strip N of Och'on-ch'on backed by flat; elsewhere by hills.	R.R. at S end, receding to parallel highway 4 mi. inland; improved roads to Kyongsong and Nanam near N end.
(16) SW shore of Kyongsong-man (FIGURE IV - 7)	Clear; bottom flat.	About 10 mi., interrupted by rocky point and river; also small pocket beach in cove at N.	50 to 75 ft.	1 on 20.	Surf heavy; some protection near Odaejin-hang (Gyotaisin-kō).	Sand; firm except near river mouth.	Hills interrupted by 1 broad and 2 narrow river valleys; small port adjoins SE end.	R.R. closely backs all except SE part; highway 3 to 6 mi. inland; improved road near SE end.

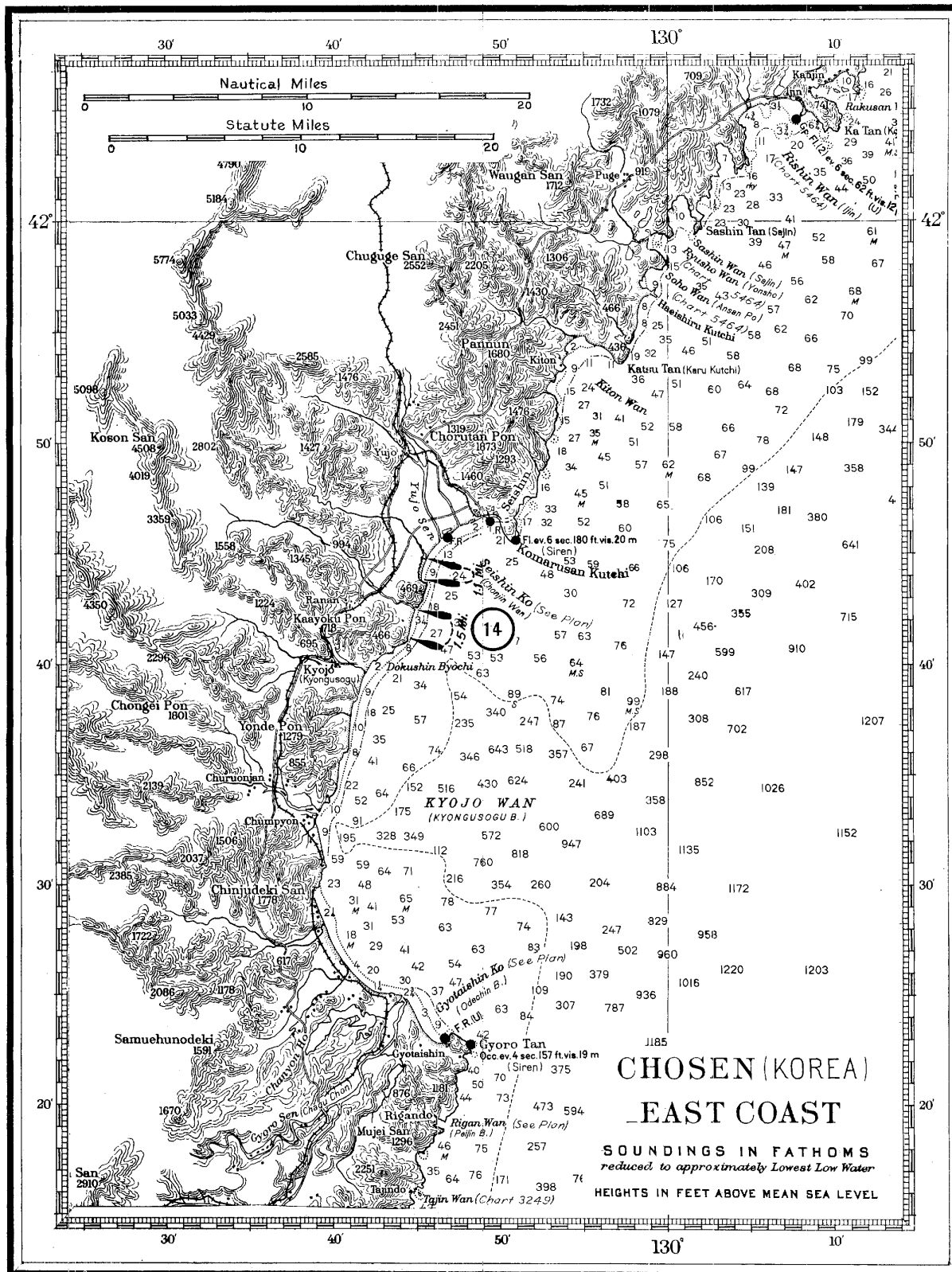


FIGURE IV - 8. East coast, Kyongsong-man (Kyōjō-wan). Beach area (14).
Section from U.S.H.O. chart 3248.

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(b) *Ch'ongjin (Seishin) beach area* (14). Reliability GOOD. (PLAN 5)

1. LOCATION AND EXTENT. The older part of the port and city of Ch'ongjin (*Seishin*) (Chapters VI and VIII) is located at the northeastern corner of Ch'ongjin-hang (*Seishin-kō*) (FIGURE IV - 8). The city lies at the foot of steep hills, but west of it the hills recede inland, giving place to the deltaic flood plain of the river Susong-ch'on (*Yujō-sen*). The low sandy shore bordering this plain extends along the head of Ch'ongjin-hang 4.8 miles southwestward from the old port and city. The newer part of the city is built at the foot of the hills along the east side of the plain, close to the shore. The newer port installations occupy the central part of the low-lying shore, on either side of the canalized mouth of the Susong-ch'on. Behind them, and between them and the new city, industrial and other buildings cover much of the ground close to the shore (Chapter VI, FIGURE VI - 10). Between the older and newer port installations, an old distributary channel appears to have been drained, and the shoreline straightened, since the compilation of the inset on U.S.H.O. chart 3248; landing might be possible along this stretch, but data on the present state of the shoreline and the means of exit are lacking, and for the purposes of this description the beach area is considered as beginning southwest of the newer port installations. Here there are 2 stretches of sandy beach, separated by 1.2 miles of cliffy coast. The northern beach is 1.1 miles long, and the southern beach 1.5 miles long. The limits of the beach area are 41°45'N, 129°45'30"E, and 41°41'N, 129°44'30"E. These beaches give access not only to the port and city of Ch'ongjin, but also to the city of Nanam (*Ranan*) (Chapter VIII), about 3 miles inland along the valley of the river Nabuk-ch'on, whose mouth marks the northern limit of the southern beach.

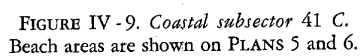
2. SEA APPROACH. The approach to the 30-foot depth is clear. The depth line is roughly parallel to the beaches at an average distance of about 1,500 feet. Thus the average bottom slope between the 30-foot depth and the beach is 1 on 50, but comparison with nearshore conditions in the more fully surveyed port area immediately to the north suggests that the 18-foot depth is considerably closer to the 30-foot depth than to the shore, and that the bottom slope becomes more gradual as the beach is neared. No nearshore dangers have been reported, but sandy shoals may be expected off river and stream mouths. The bottom is sand with local patches of mud. The prevailing winds are from the eastern quadrant during the summer months, from the northern quadrant in winter. Fog is common during the summer months. Large waves come directly in to the beach during most of the summer. The tides are small, with a range of approximately 1 foot. Tidal currents are weak.

Anchorage directly fronting the beaches is unsheltered, and is limited to the nearshore area, as the 10-fathom line is only about ½ mile off shore and beyond it depths increase rapidly.

Anchorage within the port area of Ch'ongjin is described in Chapter VI.

3. CHARACTER OF BEACH. The beach area described is composed of 2 beach segments separated by a stretch of rocky shore. The southern segment is 1.5 miles long, extending northward in a straight line from a small rocky cape to the mouth of the Nabuk-ch'on. The river channel separates the beach from the 1.2-mile rocky stretch to the north. Beyond this rocky interruption, the northern beach extends 1.1 miles northward to a breakwater protecting the southernmost harbor of the port of Ch'ongjin. Air photographs taken in winter show a partly frozen stream breaking the beach near its northern end, and it is possible that during floods the stream mouth occupies most of the northern half of the beach; in dry weather this mouth may fill up, and the stream may turn and parallel the beach to the southern end before breaking through to the sea, as shown on FIGURE IV - 8. Both beach segments are 200 to 300 feet wide; they are composed of sand, and are firm except near the river and stream mouths, where soft muddy patches may occur. Surf is almost always heavy. Shore drift is to the north on the southern beach, to the south on the northern beach. There are no structures on either beach. Water may be obtained from the Nabuk-ch'on and from the stream breaking the northern beach.

4. ADJACENT TERRAIN AND EXITS. Both beaches slope gently onto low sandy strips 500 to 1,000 feet wide, which are under grass and scrub, with a few marshy places and sand dunes. The southern beach is backed by the valley of the Nabuk-ch'on, which reaches the sea at its northern end. The valley narrows as the hills bounding it to north and south converge inland, but after 2 miles the hills cease and a broad transverse valley opens southwest and northeast. The city of Nanam (*Ranan*) is located in the southwestern arm of this valley; its northeastern arm, which is partly in rice paddies, opens onto the flood plain of the Susong-ch'on (*Yujō-sen*). There are 2 settlements along the Nabuk-ch'on valley between the beach and Nanam. The hilly area which separates the beach segments and extends 2 miles inland rises to a summit of 469 feet; the hill slopes are covered with grass and with coniferous and broadleaf trees. The northern beach is backed by the flood plain of the Susong-ch'on, which, in this western part, is largely in rice paddies. The plain narrows northward to an apex at Susong (*Yujō*), 6 miles north of the northern end of the beach area. From Susong the main railroad and primary highway run southward along the western edge of the plain to Nanam. From Ch'ongjin (*Seishin*) a branch line runs northwestward to join the main railroad at Susong, and is paralleled by a primary highway which joins the main highway 1½ miles north of Susong. Another primary highway runs southwestward from Ch'ongjin to Nanam, passing 1½ miles inland of the northern beach and 2 miles inland of the southern beach; from both beaches trails lead inland to the highway. Seishin (Ch'ongjin) airfield (Chapter XIV) is located on the plain, about 1 mile west of the position shown on PLAN 5.



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C. Orang-dan (*Gyorō-tan*) to Musu-dan (*Busui-tan*).

(41°23'N, 129°48'E; 40°50'N, 129°43'E)

(PLANS 5 and 6; FIGURE IV - 9; U.S.H.O. charts 3248 and 3249)

(1) Coast.

Along this coastal subsector, deep water is close to the shore except at certain reefy areas; there are no deep indentations. The 100-fathom line averages 3 miles off shore and depths of 5 to 20 fathoms are available for anchorage in four of the small bays indenting the northern half of the subsector. Mud forms most of the bottom sediment, interspersed with sandy and some rocky bottoms near the shore.

A chain of mountains, aligned north - south, closely backs the entire coast, attaining at one point a height of 3,352 feet within 6 miles of the shore. The mountains inland are cut by narrow valleys. A series of high cliffs, interrupted only by some sandy beaches at bayheads, rises directly from the shore.

Vegetation near the shore consists of extensive wild grassland and areas of coniferous and broadleaf trees. The mountains inland have similar vegetation, and there is no land under cultivation. Numerous streams run into the sea; their valleys are narrow and precipitous.

1

From Orang-dan (*Gyorō-tan*) a forbidding fringe of cliffs and steep rocky shore is interrupted about 3½ miles southward by Iam-man (*Rigan-wan*), a small bay with deep water in it (inset on U.S.H.O. chart 3248). Clifty promontories form its northern and southern entrance points, and a third promontory divides the bayhead into two bights. Cliffs line most of its shores, but at the head of each bight there is a short sandy stretch backed by a village.

Kwa-dan (Kwe Kutchi), which forms the southern entrance point to Iam-man, is succeeded southwestward by 1½ miles of cliff-edged coast. Behind this stretch a mountain rises to 1,283 feet ¾ mile inland. At the southern end of the stretch is a small semicircular bay with sandy shores and a good beach on the north side (beach area (17), TABLE IV - 3). Shoals and two islets lie off the northern entrance point of the bay and the village of Osang-dong, traversed by a trail, backs the western shore. A low, hilly coast continues another ½ mile; south of this is a longer clifty stretch which terminates at Tajin-man (*Tashin-wan*).

This small double bay is divided by an island, Haeju-do* (*Kaisō-tō*, Hechu To; U.S.H.O. chart 3249), 172 feet high and fringed with cliffs. A reef connects it with the mainland and off its southeastern tip detached rocks extend 200 yards. Hama-dan and Pujon-dan (Puruchon Tan) form the northern and southern entrance points of Tajin-man. These are cliff-edged, but the shores of the double bayhead are low and sandy (beach area (17)). On the southern bayhead lies the village of Tajin-dong (*Tashin-dō*).

A large rock lies off the tip of Pujon-dan. Less than a mile farther along the steeply-sloping coast is a sandy beach at the head of a baylet surrounded by hills. The unimproved road which runs close behind this beach through the village of Samp'o-dong has a junction, ¼ mile inland, with an improved road leading inland to the valley of the Orang-ch'on 4½

miles west, which is traversed by the highway and railroad to Wonsan (*Genzan*).

Southward 1¾ miles along the coast is Taeryanghwa-man (*Tairyoka Wan*), the best harbor in this subsector. The intervening stretch of coast is similar to that farther north. The clifty shores are interrupted in two places by baylets with sandy beaches at their heads. A village occupies the southern of the two miniature bayheads.

Taeryanghwa-man (*Tairyoka Wan*; U.S.H.O. chart 3249) is ¾ mile wide across its entrance. Ung-dan (Mei Kutchi), a cliff-edged promontory, is the northern entrance point of this bay; its seaward face is white. Reefs edge the water line of the cape, and rocks and islets, the largest of which is called Ung-am (Soru Pau), lie close to shore northward of the bay entrance. The north and south shores of the bay are clifty to rocky, interspersed with short sandy stretches. The long bayhead is composed entirely of sandy beach (beach area (17)), broken by the outlets of 2 streams and backed by the village of Taeryanghwa (*Tairyōka*). There is a small island off the midpoint of the northern shore and another islet, No-am (Karu Pau), lies about 200 yards east of Song-dan (Son Kutchi), the southern entrance point of the bay.

2

Six miles south of Song-dan is Kojin-man (*Kōshin-wan*). The intervening coast is similar to that northward; it consists in general either of high cliffs rising from the water's edge or of a rocky shore backed by steep slopes or bluffs. There are 3 shallow baylets in this stretch. The first and smallest baylet is about ¼ mile wide and is at the base of the slender rocky peninsula which forms the southern side of Taeryanghwa-man (*Tairyoka Wan*). Its shore consists of a narrow sandy beach (beach area (17)). A stream empties into this bay on its south shore and the coastal road parallels the bayhead along the beach. The second baylet, ⅓ mile wide across its entrance, is flanked by rocky-to-hilly promontories. Three rocky points interrupt the sandy bayhead (beach area (17)), along which the coastal road parallels the shore. A village lies in a ravine behind the beach at the north end of the bayhead. Another village, Udong-dong (Sudong-dong on PLAN 5) occupies the south bayshore and the southern end of the bayhead. At this point, near the mouth of a stream which empties into the bay, the coastal road joins a trail which leads inland along the stream valley and across the mountains. The third baylet is open, with a clifty headland as its northern entrance point, and a rocky, hilly one as its southern entrance point. The irregular bayhead is sandy, and is interrupted by several rocky points. Three rocks are offshore of these points, and another rock lies offshore of a short clifty stretch along the south shore.

Kojin-man (*Kōshin-wan*) (U.S.H.O. chart 3249) lies immediately south of the third baylet described above. Its northern entrance point is part of a series of high cliffs rising precipitously to hills which tower near the water. There are reefs at the foot of the cliffs at the entrance point, and rocks lie close off the entire northwestern shore of the bay. The sandy bayhead (beach area (17)) is divided by a rocky point, 108 feet high, which is cliff-edged and surrounded by rocks and a reef. Behind this the village of Hwangjin-dong (Kojindo) lies along the shore at the foot of high hills. A second village is scattered along a stream which empties into the bay at the north end of

* This island is incorrectly named Haptu-do on PLAN 5.

the bayhead. The beach is broken by a second stream which flows into the bay, near a small rocky point dividing the north-western bayhead. A valley follows the first stream inland and is the northward route for the coastal road which parallels the beach to southward. Reefs and rocks lie close off the eastern part of the southeastern bayhead beach, and continue eastward along the south shore of the bay.

Poksuk-tan (*Fukushuku-tan*, Pokusu Kutchi), the southern entrance point of Kojin-man, terminates a high, cliff-fringed peninsula, on the north side of which a cliffy promontory juts into the bay.

From Poksuk-tan to the southern side of the base of the peninsula, and for about $\frac{3}{8}$ mile south along the coast, there is an unbroken chain of high cliffs. These rise abruptly to lofty grass-covered hills, the highest of which, Sudong-bong (Muri-koru Pon), is conspicuous, rising 660 feet immediately above the cliffs on the south side of the peninsula. Southward the cliffs give way to a low rocky stretch which extends slightly less than $\frac{1}{2}$ mile and is backed by a small lowland area containing a village. The coastal road runs along the inland side of the lowland area, then turns farther inland around a mountain. There is a sizable detached rock off shore here and smaller rocks along the coast southward where the cliffs resume for a short stretch. These give way, in turn, to a small beach at the mouth of another small valley. A village lies in the valley, where the coastal road turns shoreward. The road then skirts the shore at the foot of cliffs close to the waterline. Along this waterline about $\frac{1}{2}$ mile of low rocky shore continues to the valley of the Poch'on-ch'on.

A beach almost $\frac{1}{2}$ mile long fronts the mouth of this valley (beach area (17)). The river Poch'on-ch'on empties into the sea near the north end of the beach, behind which the valley, sandy and uncultivated, serves as a route for an improved road leading inland over the mountains. A group of buildings backs the south end of the beach, and behind the buildings a 901-foot hill rises inland. It is covered with coniferous and broadleaf trees.

The south end of this beach curves eastward to a rounded point of land on which is a low hill. A north-flowing stream, with a valley about $\frac{1}{8}$ mile wide, paralleling the shore, empties into the sea where the beach curves eastward. A chain of small hills borders the shore south of the valley. The shore is sandy to rocky and there are numerous detached rocks lying close off shore. The village of Chungp'yong-dong lies on the shore of a small bight which terminates this stretch of shore. A small round promontory with several detached rocks close off shore forms the southern entrance point of the bight. There is a larger bight which begins on the south side of the promon-

tory, the north shore of which is sandy. The coastal road runs along the west side of the above-mentioned valley, then skirts the shore of this baylet. Midway along the head of the baylet is a rocky point, and detached rocks lie close to shore south of the point. Numerous detached rocks also lie off the sandy southeast entrance point of the baylet.

From this point to Chondok-tan (Abuteki Kutchi), the northern entrance point to P'ohang-man (*Hokō-wan*), a distance of about $2\frac{1}{2}$ miles, the coast varies from sandy to cliffy. The longer of two cliffy stretches lies to the south, and at the south end of these cliffs there is a bight, the head of which is sandy and is backed by a valley. A village lies at the north end of the head of the bight and two streams empty into it, one at the north, the other at the south end of the bight head. Cliffs border the south shore, which terminates in the cliffy point of Chondok-tan.

3

P'ohang-man (*Hokō-wan*; U.S.H.O. chart 3249) is the southernmost usable bay in this subsector. Its north shore is an unbroken series of cliffs which rise in "stairsteps" to the 475-foot peak of Chondok (Abuteki). Its sandy bayhead is divided in two by the cliff-edged point of Haemangdae-dan (Haman-dei Kutchi). Reefs surround the point, and extend off the beaches (beach area (18)) to north and south; detached rocks lie off the point. The small town of P'oha-dong (*Hokō*) lies in the low area behind the northern beach and a village, Kojin, is scattered at the foot of a hill behind the southern beach. A coastal trail runs through these settlements. Cliffs and reefs edge the south bayshore, and rocks run 600 yards northeast into the bay, ending near the islet of Hu-am (Tue Segui). On the eastern part of the south bayshore there are two promontories, the eastern, Mu-am (Chu Pau), forming the southern entrance point of the bay. About 600 yards northeast of this point is a 21-foot rock, Chonsok-kun.

The high, grass-covered hills behind P'ohang-man continue southward to the end of the subsector. There are occasional growths of broadleaf and coniferous trees, as well as scrub pine on the heights. A very rugged stretch about $9\frac{1}{2}$ miles long ends at Musu-dan (*Busui-tan*). The northern stretch as far as Unmandae-dan (*Ummandai-tan*) consists of cliffs alternating with sandy-to-rocky stretches (beach area (18)). The high promontory of Unmandae-dan is backed by a 2,849-foot mountain only 5 miles inland. About 2 miles southward is the conspicuous cape of Mokchin-dan (*Mokushim-tan*), backed by peaks. Just north of it 2 small bights form the only interruption to the cliffy coastline, which continues precipitously to Musu-dan.

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(2) Landing beaches.

TABLE IV - 3
LANDING BEACHES OF COASTAL SUBSECTOR 41 C
Reliability GOOD. (PLANS 5 and 6)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(17) Straight coast from Odaejin-hang (<i>Gyotai-shin-kō</i>) S to Lat. 41° N. (PLAN 5)	Steep-to; clear into beach centers.	Many pocket beaches; average length 0.3 mi.	25 to 50 ft.	1 on 15.	Surf heavy.	Sand and pebbles.	Narrow steep valleys leading into high steep mountains.	Coastal road passes close behind all except 3 northernmost beaches.
(18) N of Unmandae-dan (<i>Ummandai-tan</i>). (PLAN 6)	Partly obstructed by rocks and rocky island.	Pocket beaches; 0.2 to 0.6 mi.	25 to 50 ft.	1 on 15.	Surf heavy.	Sand and pebbles.	Narrow steep valleys leading into high steep mountains.	Beaches isolated, except for steep trails.

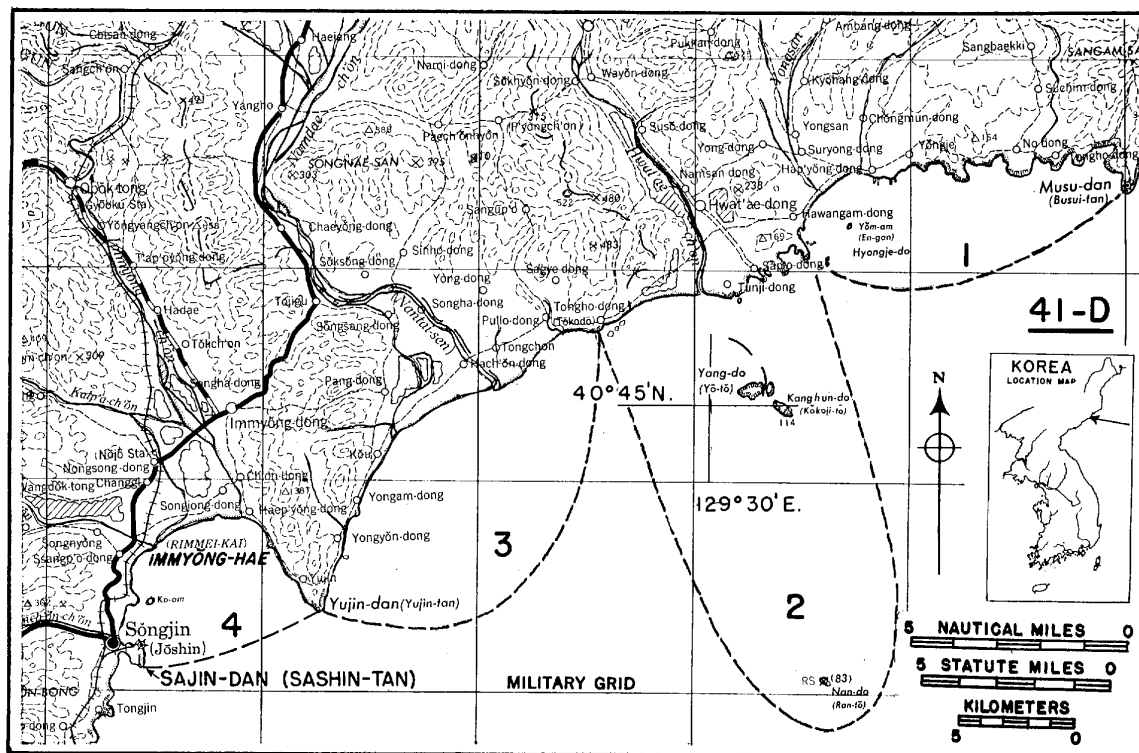


FIGURE IV - 10. Coastal subsector 41 D.
Beach areas are shown on PLAN 6.

D. Musu-dan (*Busui-tan*) to Sajin-dan (*Sashin-tan*).
($40^{\circ}50'N$, $129^{\circ}43'E$; $40^{\circ}39'N$, $129^{\circ}13'E$)
(PLAN 6; FIGURE IV - 10; U.S.H.O. charts 3248 and 5667)

(1) Coast.

The water approach to this coastal subsector is generally clear, the 100-fathom line varying from 3 to 7 miles off shore and the 10-fathom line from about 100 yards to a mile. Mud and sand form the bottom sediment. Islands lie in a north-south alignment off Tadong-dan (Tado Tan), and a few smaller islands lie close to the shore.

The coast, which includes the port of Songjin (*Jōshin*), has 3 major bights which only slightly indent the mainland.

There are extensive sandy stretches along the shore, alternating with cliffs and rocky areas, particularly toward the east.

This subsector is backed throughout by mountains ranging to over 3,000 feet in altitude. The highest lie 7 miles north of Hwangamdong-myoji (Kogando Byochi) in the eastern part of the subsector; toward the west, a height of over 1,000 feet rises on the cape behind Yujin-dan.

Alluvial valleys are interspersed in the coastal mountains, forming sandy plains at their mouths; these valleys become narrower upstream. Extensive rice paddies are under cultivation in the valleys. On the mountains the vegetation includes scrub

pine and wild grass, as well as patches of coniferous and broadleaf trees.

1

Close off the southwest extremity of Musu-dan (*Busui-tan*), there is a 56-foot rock rising out of deep water. Reefs and rocks lie close off shore northward along the west side of the cape, then northwestward as far as Sangdaebong-dan (Santagi Kutchi), the eastern entrance point of Kalma-p'o (*Katsuma-bo*, Karuma Ho; inset on U.S.H.O. chart 3248). Sangdaebong-dan is cliff-edged and bordered with reefs. About 750 yards south of it is a dangerous detached rock 6 feet under the surface, with deep water around it. The east shore of Kalma-p'o is cliffy, with rocky shoals close off shore. A beach (beach area (19)), TABLE IV - 4) fronts the bayhead, and the village of Kalma (*Katsuma*, Karuma) lies behind the west end of the beach near a stream which empties into the bay at the latter's northwest angle. The west shore is cliffy and bordered with rocky reefs. A cliff-edged point, Se-dan (Kanun Kutchi), forms the western entrance point of this baylet.

Westward from Kalma-p'o five other small bights indent the coast (U.S.H.O. chart 3248). High cliffs border the entrance points and parts of their shores. In each of the second, third, and fourth bights there is a short sandy stretch (beach area (19)). A fair-sized village, No-dong, lies behind the eastern shore of the third bight, which is roughly V-shaped and has a beach along both shores. There is a short beach, backed by a small village, at the head of the next bight. Its west shore is formed by a small peninsula. Both shores of this bight are cliffy to rocky, and cliffs edge the shores of the fifth bight, continuing westward about $\frac{3}{5}$ mile beyond the western entrance point of this bight.

Beyond this is a short stretch of beach (beach area (19)), followed by a bluff-to-rocky stretch with reefs close off shore, which continues to Samhadok (Sankatoku), a round reef-edged point.

Samhadok is the northeastern entrance point of the open bay, Hwangamdong-myoji (Kogando Byochi; U.S.H.O. chart 5667). Almost $2\frac{1}{2}$ miles southwest is Pul-am (Butsu Gan), the southwestern entrance point, at the end of a hilly peninsula. Some 800 yards off Pul-am, east-southeastward, lies a group of steep rocks called Hyongje-do (Keitei To), which rise 10 to 92 feet out of the water. About halfway between these rocks and Samhadok, an 18-foot rock called Yom-am (*En-gan*) rises from deep water at the entrance of the wide anchorage.

At the head of Hwangamdong-myoji (Kogando Byochi) is a 2-mile stretch of beach (beach area (20)). The beach is broken about midway by the mouth of the Yongsan-ch'on (Ryusan Sen), and a short reef extends off shore opposite the stream mouth. Two smaller streams enter the bay farther eastward. The valleys of the 3 streams converge behind the beach to form a plain on which several villages are scattered. The village of Hap'yong-dong (Kaheido) lies behind the northeast end of the bayhead, and the larger village of Hwangam-dong (Kogando) backs the southwest end. Inland along the first valley and north of the southwestern part of the bayhead, rice is under cultivation, but the other two valleys are uncultivated. Wild grass and scrub pine cover the spurs of low hills which extend seaward between the valleys. Nine miles directly north is a 2,835-foot mountain peak. Close off the western shore of

Hwangamdong-myoji, north of Pul-am (Butsu Gan), reefs and detached rocks border the shore for about $\frac{1}{2}$ mile.

2

This stretch of coast resembles the preceding subdivision in general character, but differs in having larger islands off shore.

From Pul-am westward almost to the mouth of the Hwat'ae-ch'on (Ryuko Taku), about $2\frac{1}{4}$ miles, there are indentations, cliffy promontories, rocks, and shoals.

Pul-am forms the eastern entrance point of a small bay. Changhang-dan (Shoko Tan), the western entrance point, lies $\frac{1}{2}$ mile westward. The bayhead comprises four rounded bights which are divided by cliffs and have beaches at their heads (beach area (21)). Hills surround the baylet; a village lies behind the second bight, and off shore are narrow, fringing reefs and rocks.

The next baylet westward is similar to that just described, both off shore and behind the shore. Changhang-dan (Shoko Tan), its east entrance point, terminates a slender peninsula and rises to a 139-foot hill. Reefs and rocks, partly above water, extend about $\frac{1}{4}$ mile off Changhang-dan. The western entrance point of this baylet is formed by Chang-am (Cho Gan), a group of rocks at the end of a reef. Two villages lie back of beaches (beach area (21)) on the scalloped bayhead, and a cliffy, reef-edged point, Sap'o-dan (Shiho Tan) divides the baylet into two major parts.

A spur of hills terminates along the next mile of shore. This stretch is rugged and includes several small points as well as Tadong-dan (Tado Tan), a headland, 200 yards off which lies a 12-foot rock. On the west side of the above-mentioned spur of hills runs the valley of the Hwat'ae-ch'on (Ryuko Taku). A sandy stretch of shore edges the water for about $\frac{3}{5}$ mile east of the river mouth (beach area (22)).

Off shore a group of 3 islands and another single island lie in a line south-southeast of Tadong-dan. In the group of 3, which is about 2 miles off shore, two of the islands are inhabited, and one is uninhabited. The uninhabited island is the southernmost of the group, Kanghui-do (*Kokoji-to*; Kanghundo on PLAN 6); it is barren and precipitous, rising to a 371-foot summit. The other two, known as Yang-do (*Yō-to*), are less precipitous and are extensively cultivated. The single island of Nan-do (Ran-to; U.S.H.O. chart 3248) lies about $6\frac{1}{2}$ miles to seaward of the above group. It is a landmark in the approach to Songjin (*Jōshin*); it is steep-to except for some detached rocks, is almost completely barren, and rises steeply to a 270-foot summit.

The mainland shore westward from the mouth of the Hwat'ae-ch'on (Ryuko Taku) consists of about $2\frac{1}{2}$ miles of sandy beach (beach area (22)). Detached rocks lie off the western end. A plain backed by hills lies behind the beach. Rice is under cultivation on the plain and also along the valley of the Hwat'ae-ch'on for some miles inland.

A cliffy promontory terminates subdivision 2. It forms the west entrance point of a small bight behind the head of which lies the village of Tongho-dong.

3

This stretch of about 9 miles consists almost entirely of sandy beach (beach area (22)). The Namdae-ch'on (*Nantai-sen*) flows into the sea at a point about $\frac{1}{3}$ of the distance westward and a fairly extensive plain on either side of the



FIGURE IV - 11. East coast. Vicinity of Songjin (*Jōshin*). Beach area (23).
Note hills on east and west, low land at head of bay. Approximate position 40°40'N, 129°15'E; U.S.H.O. chart 5667. A.A.F.
468BG/4MR44, dated 21 December 1944.

river backs the beach. Less than a mile inland rice is under cultivation in the western part of the valley and also at various points northward along the river, which is long and many-branched. About 12½ miles north of the river mouth there is a junction of the east coast railroad from Ch'ongjin (*Seishin*) with the inland line from Musan on the Manchurian border. The line then runs south-southwestward through Songjin (*Jōshin*). A highway junction occurs at the same place, and the primary highway parallels the river southward to within 5 miles of its mouth. Trails criss-cross the valley near the shore, and one trail borders the cape described below.

Paralleling the Namdae-ch'on on the west side of its valley a chain of mountains rising to over 1,000 feet at many points extends southward and forms the triangular cape which terminates at Yujin-dan. This promontory is high and is edged on

the east side with rocky shore, on the west with cliffs, which continue northwestward about ½ mile. Close to the shore about 1½ miles northeast of Yujin-dan is a 76-foot islet, P'ungsan-am (Fusan Gan).

4

The shores of Immyong-hae (*Rimmi-kai*) (U.S.H.O. chart 5667; FIGURE IV - 11) make up this entire subdivision (beach area (23)). The bay has deep water and clear approaches. From Yujin-dan (Yujin Tan), the eastern entrance point, the irregular east shore extends about 2½ miles to the sandy bayhead. Cliffs, backed by high hills, edge a short segment of the shore northwest of Yujin-dan, then give way to a lower shore. Rocky points and cliffs behind beaches occur where spurs slope shoreward from the high center of the cape. The slight indentations have sandy shores, broken by the

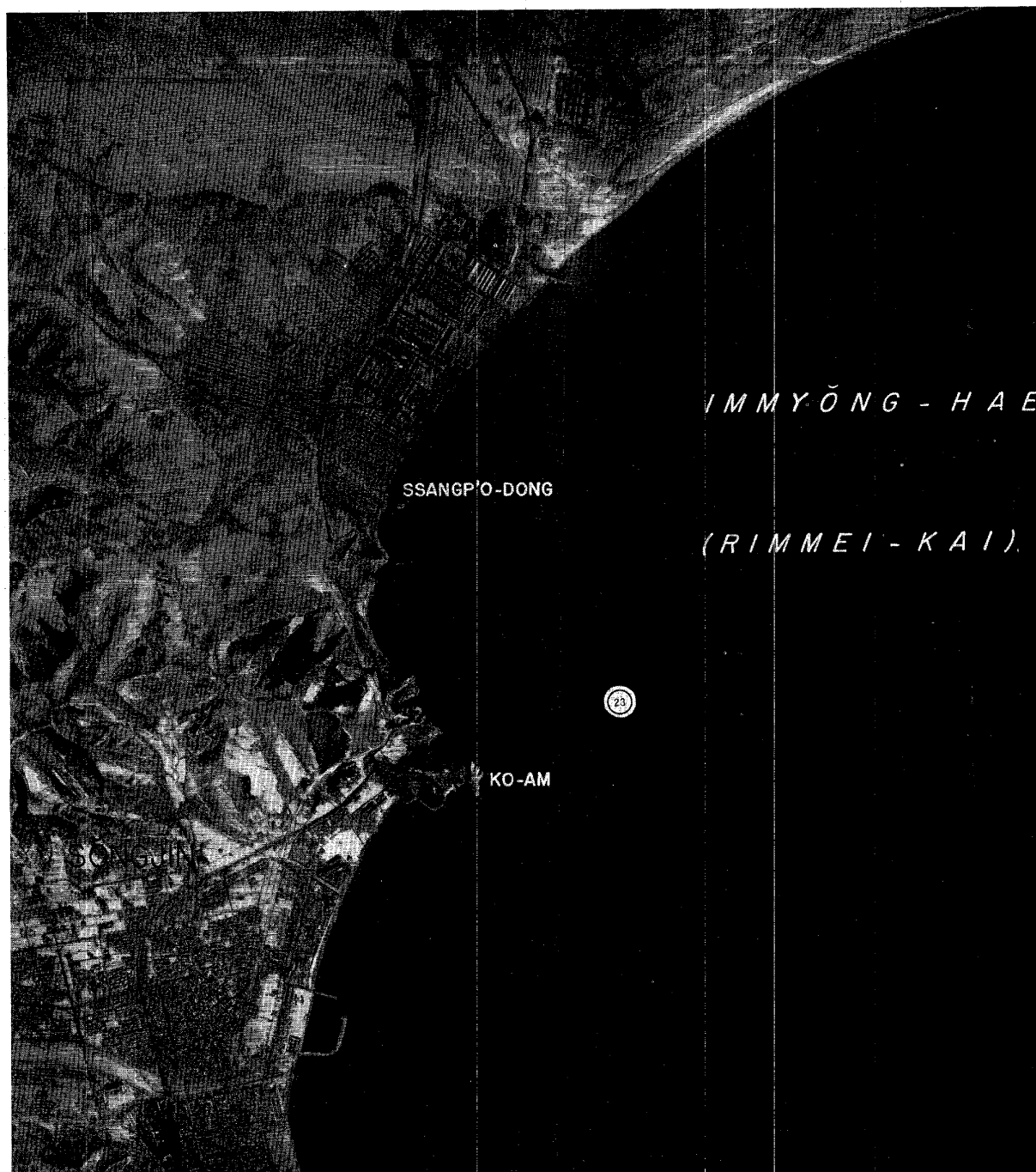


FIGURE IV - 12. East coast. Vicinity of Songjin (*Jōshin*). Beach area (23).
 Note parallel sandy ridges backing wide beach north of city. Approximate position 40°41'N, 129°13'E; U.S.H.O. chart 5667.
 A.A.F. 468BG/4MR44, dated 21 December 1944.

mouths of streams flowing down small valleys. The village of Yujin lies behind the beach of the largest bight, and two other villages lie back of beaches farther along the east bayshore. The village of Haep'yong-dong occupies a flat area behind the eastern extremity of the bayhead, where the hills end. Cliffs rise behind this village, and close westward of it the Immyong-ch'on (Rimmei Sen) empties into the bay.

The mouth of another stream is less than $\frac{2}{3}$ mile farther west. A small lagoon lies behind the beach on the east side of the stream and on its west bank is a small village. The beach is broken again $1\frac{1}{4}$ miles westward by the mouth of the Kalp'a-ch'on, which runs parallel to the shore about $\frac{1}{8}$ mile inland for about a mile before reaching the sea.

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Still another stream mouth occurs about 200 yards westward. This is the Ssangp'o-ch'on (Soho Sen) which flows eastward. Extensive areas of rice are under cultivation in all these stream valleys and in the alluvial plain behind the bayhead. There are also patches of wild grass, scrub pine and other coniferous trees in the plain as well as on the slopes of the surrounding hills and mountains.

The long valley of the Immyong-ch'on serves as the route for the railroad mentioned in subdivision 3, and a secondary highway runs through the same valley. It makes a junction with the primary highway from Ch'ongjin (*Seishin*) at the small town of Immyong-dong (*Rimmei-dō*) 3 miles north of the eastern end of the bayhead. The primary highway then crosses the valley and runs southward through Songjin (*Jōshin*).

Near the western end of the bayhead is an extensive industrial area (FIGURE IV - 12), adjoining the village of Ssangp'o-dong (Sohodo). A few rocks lie off shore near the village, and the low bayhead shore ends at a cliffy point with off-lying rocks and reefs, backed by a hill. Another short stretch of beach leads to the cliffy, reef-edged shore of a promontory extending south-eastward, which is the termination of a chain of hills. A cliff-edged islet, Ko-am, 138 feet high, lies close off its end. Reefs

border the islet and the promontory, but deep water is near, as the 5-fathom line runs within about 100 yards of the islet.

Ko-am is the northern entrance point of Songjin-hang (*Jōshin-kō*), a baylet slightly over a mile wide which is occupied by the port and city of Songjin (*Jōshin*) (Chapters VI and VIII). The headland mentioned above, forming the north shore of Songjin-hang, is cliff-edged. Beginning at the southern side of its base, a beach runs southward about 1,000 yards, terminating at the port installations, which occupy the remainder of the bayhead. The south shore of Songjin-hang is formed by a peninsula, narrow at its base, which extends eastward to Hanggu-dan (Koko Tan), then southward to Sajin-dan (Sashin Tan). Cliffs edge the north shore of the peninsula, except at its neck, which is low; a 207-foot hill steeply overhangs these cliffs at one point. Rocky shoals extend eastward off Hanggu-dan about 100 yards, and from this promontory to Sajin-dan there are unbroken cliffs, steep-to except for two shoal patches close off shore. The 10-fathom line runs within about 70 yards of Sajin-dan.

The west shore of Immyong-hae (*Rimmei-kai*) is backed by hills rising to mountains and cut through by stream valleys.

(2) Landing beaches.

TABLE IV - 4
LANDING BEACHES OF COASTAL SUBSECTOR 41 D
Reliability GOOD. (PLAN 6)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(19) W of Musu- dan.	Partly obstructed.	Several pocket beaches, averaging 0.3 mi.	25 to 50 ft.	1 on 15.	Surf heavy with S and SE winds.	Sand and pebbles.	Rough hills, rising rap- idly inland.	Beaches isolated, except for steep trails.
(20) Hwangam- dong-myoji (Kogando Byochi)	Clear except for small island off center of beach.	2.3 mi., inter- rupted by river Yongsan-ch'on.	50 to 75 ft.	1 on 20.	Surf heavy.	Firm sand.	Small river plain, chiefly in rice, narrowing rapid- ly inland.	Trails up river valley and over hills.
(21) NE of Tunji-dong.	Generally clear, flat nearshore slope.	Several pocket beaches, aver- aging 0.2 mi.	25 to 50 ft.	1 on 15.	Surf heavy.	Sand and pebbles.	Ravines rising rapidly into hills.	Poor road runs inland over hills from Sap'o-dong.
(22) NE of Yujin-dan.	Generally clear; bottom flat; islands off NE end.	13.7 mi., in- terrupted by rivers and rocky points.	100 to 125 ft.	1 on 25.	Surf heavy.	Sand.	River plains at NE end and center of beach; hills elsewhere; sand dunes and swamps line shore of plain.	Trail within 1 mi. of shore throughout; trails branch inland to highway 4 mi. behind SW part of beach, farther inland to N.
(23) Immyong-hae (<i>Rimmei-kai</i>) ... shore. (FIGURES IV - 11 and IV - 12).	Generally clear, rocks off E	6.6 mi., in- terrupted by cliffed cape and several rivers.	150 to 200 ft.	1 on 20.	Surf heavy, except near Songjin.	Sand.	In NE backed by steep hills; in NW by rice- and sand-covered plain; in W by hills and flats and by city of Songjin.	W part of beach backed by R.R. and highway from Songjin.

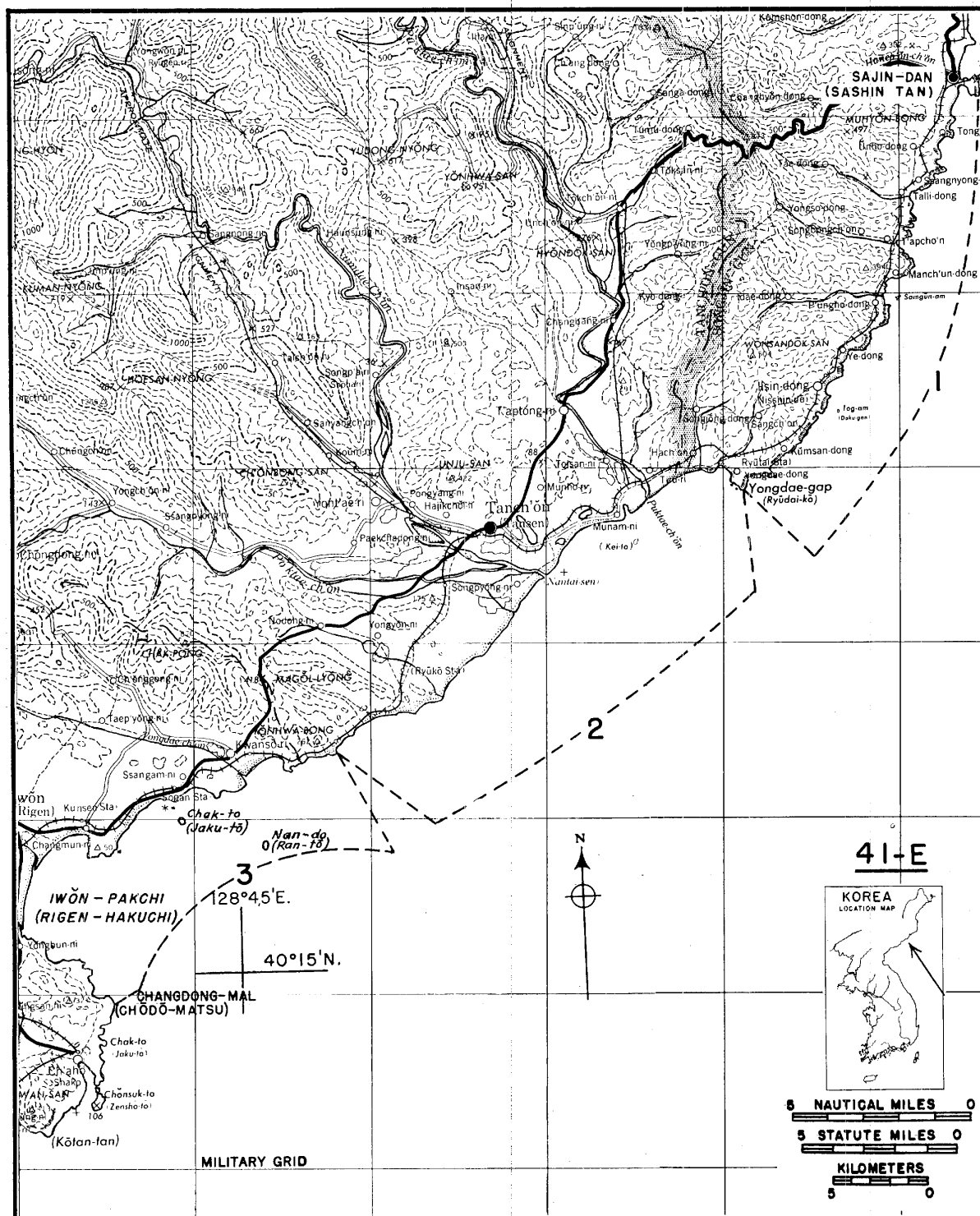


FIGURE IV - 13. Coastal subsector 41 E.
Beach areas are shown on PLANS 6 and 7.

E. Sajin-dan (*Sashin-tan*) to Changdong-mal (*Chōdō-matsu*).

(40°39'N, 129°13'E; 40°14'N, 128°40'E)

(PLANS 6 and 7; FIGURE IV - 13; U.S.H.O. charts 3248, 5667, and 5668)

(1) Coast.

The water approaches to this coastal subsector are clear except for several rocks and small islets close to the shore. The 100-fathom line varies between 5 and 10 miles off shore and the 10-fathom curve from about 100 yards to a mile, except in Iwon-pakchi (*Rigen-bakuchi*), where it is about 2 miles from the head of the bay. The bottom sediment consists of mud and sand.

The coast has no deep indentations but is rugged, with cliffs and rocky points broken by coves and backed precipitously by hills, particularly along subdivision 1. There is a sandy stretch along most of subdivision 2 and at the head of Iwon-pakchi. A number of rocks lie within ½ mile of the shore and there are several islets, Nan-do (*Ranto*) being farthest from the shore at about 1½ miles.

The inland massif which lies behind the previous three coastal subsectors continues westward and southwestward behind the whole of this subsector. Its foothills back the shore and several heights of over 1,000 feet are between 1 and 3½ miles inland. Less than 7 miles north of Iwon-pakchi is a 3,254-foot summit.

Several stream and river valleys cut through this terrain to the coast, and rice is cultivated in the broader valleys. Vegetation on the hills and mountains is like that in the preceding three coastal subsectors. However, broadleaf forests are more numerous here, particularly in the southwestern half.

1

This 13-mile coastal stretch is a series of cliffy or rocky points alternating with coves, none of which indent the coast more than about ½ mile. Short beaches, usually sandy, front the heads of many of these coves (beach area (24), TABLE IV - 5). The 3-fathom line spans the entrances of several, while others are blocked by reefs. There is deep water near the points, most of which are fringed wholly or partly with cliffs.

The first cove (U.S.H.O. chart 5667) is backed at its head by part of the city of Songjin (*Jōshin*) (Chapter VIII), which spans the base of the peninsula terminating in Sajin-dan (*Sashin-tan*). A small fishing harbor, forming part of the port facilities of Songjin (Chapter VI), occupies the western end of the head of the cove (FIGURE IV - 11). East of this harbor the shores of the cove are bordered by a narrow beach, part of which is fronted by rocks. A spur from the railroad passes close behind the western end of the beach, from which there is also easy access to the primary highway running southwestward to Wonsan (*Genzan*). The highway turns inland from Songjin, and is separated from the coast by mountains throughout the remainder of this subdivision. The railroad follows the coast, passing through numerous tunnels, and is closely paralleled by a trail.

Several villages lie along the shore of this subdivision at points where small valleys between high hills run down to the sandy heads of coves. About halfway south along this stretch (U.S.H.O. chart 3248) is a small open bay with a group of

island rocks, Samgun-am, lying at the center of its entrance. Two wide, cliff-edged promontories form its northern and southern points, and at the bayhead are 2 beaches separated by a rocky stretch which rises steeply to a hill. The village of Manch'un-dong lies behind the northern beach, near where the railway issues from a tunnel, and the village of P'ungho-dong lies behind the southern beach, near the entrance of another tunnel. A stream valley backs this beach and high hills rise all around the bay, attaining a height of 1,278 feet just ¼ mile inland from the northern beach.

Southward 3½ miles, another island rock, Tog-am (*Dokugan*) lies about ½ mile off shore, rising 8 feet above the surface. From this point to Yongdae-gap (*Ryūdai-kō*, Yonte Kapu), the promontory which terminates this subdivision, rocks lie close off shore at many points.

The rocky point of Yongdae-gap terminates a hilly peninsula and forms the southwestern entrance point of a small open bight, whose eastern entrance point is Mangdong-mal (Manteki Kutsu; inset on U.S.H.O. chart 5668). This rocky point rises to a 115-foot hill and is surrounded off shore by an immense number of rocks. The irregular shore of the head of the bight is low at some places, but is backed closely by hills. The entire shore is fringed by off-lying rocks.

2

Most of this stretch is low and sandy, and only one bight, Yongdae-pakchi (*Ryūdai-byōchi*) indents the entire subdivision.

From Yongdae-gap the shore of the cape runs northwestward about ½ mile to the southeastern entrance point of Yongdae-pakchi (*Ryūdai-byōchi*), a shallow bight. The bottom of the bight is of fine sand, is free from rocks, and slopes gradually. The short southern shore has reefs off shore and rises to a 157-foot hill forming the southeastern entrance point. The village of Yongdae-dong (*Ryūdai-dō*) lies along this shore and curves northward paralleling the bayhead beach. This low, sandy beach (beach area (24)), approximately 1,000 yards long, is cut by the mouths of 3 streams and backed by a valley where rice is under cultivation, but a strip of marshland lies immediately back of more than half of it, ending at the northwestern extremity. The largest of the 3 streams enters the bight at the latter point, where the rocky northwest bayshore begins. This shore rises steeply to a series of hills, and is fringed off shore by numerous rocks. The railroad and a trail parallel the shore near the foot of the hills. About ⅓ mile northwestward of the western entrance point of the bay, the hills slope down to another stream valley, and at this point, where a stream empties into the sea, a long stretch of beach begins, unbroken for about 8 miles, save by river, lagoon and stream mouths (beach area (25)).

In the stream valley mentioned above, which runs northward between high hills, extensive rice paddies lie north of the railroad and southward along the east side of the valley. Patches of scrub pine and other coniferous trees grow among sand dunes west of the stream and south of the railroad and the coastal trail runs near the water.

About 2 miles farther along the beach (U.S.H.O. chart 3248) is the mouth of the Puktae-ch'on, a long river whose valley is broad for almost 5 miles inland, then increasingly narrow and precipitous. A chain of hills running southward divides this valley from the one previously described, and slopes

to the level of the beach about $\frac{1}{8}$ mile inland. Areas of rice paddies alternate with uncultivated spaces along both the east and west sides of the Puktae-ch'on.

About $\frac{1}{2}$ mile west of the river mouth is the outlet of a narrow lagoon which stretches inland about the same distance. Just west of the lagoon is the village of Munam-ni, backed northwestward by a cliff and traversed by the railroad and an improved road. One mile offshore of this lagoon mouth is an island, Kwae-do (*Kei-tō*). It rises 133 feet and is rocky. About halfway between the island and the shore, shoals rise to within some 15 feet of the surface. Another rocky islet lies close off the mouth of the lagoon.

From this point to the mouth of the next river, the Namdae-ch'on (*Nantai-sen*), the beach is backed by low hills, along the seaward slopes of which the railroad runs. Between the railroad and the shore lie two ponds or lagoons, one almost a mile west of the other, near which the coastal road runs. Patches of wild grass and coniferous trees grow behind the beach, and these alternate with scrub pine on the hills.

The mouth of the Namdae-ch'on (*Nantai-sen*) has low sandy banks. A village lies behind the beach northeast of the river mouth, and behind it low hills rise inland. About 0.7 mile northward the hills give way to a broad valley filled with rice paddies. This valley is an eastward extension of the sandy alluvial plain which borders the Namdae-ch'on and its tributary, the Poktae-ch'on, flowing from the west. The town of Tan-ch'on (*Tansen*), on the north side of the plain, is the terminus of a narrow-gauge branch railroad running northwestward to Pungsan (*Hōzan*). The Poktae-ch'on empties into the Namdae-ch'on (*Nantai-sen*) about a mile inland. Rice paddies cover large areas of both valleys. The primary highway from Songjin (*Jōshin*), after passing through Tanch'on, crosses both rivers and parallels the coast southwestward at a distance of 3 to 4 miles.

About $1\frac{1}{3}$ miles southwest of the mouth of the Namdae-ch'on, the beach is interrupted by the artificial harbor of Yonam-ni (Yongom-ni, *Ryūgan-ri*). This secondary port (Chapter VI) is of recent construction; at the end of 1944 parts of it were still uncompleted, and roads leading from it in the direction of Tanch'on (*Tansen*) were under construction (FIGURE IV - 14). A spur from the coastal railroad extends to a factory located about $\frac{3}{4}$ mile north of the harbor.

Elsewhere along the 3-mile stretch southwestward from the mouth of the Namdae-ch'on, the coastal plain is largely planted to rice; wild grass grows immediately behind the beach. This stretch is terminated by a rocky point rising to a 211-foot hill.

From this point another stretch of beach extends about $1\frac{3}{4}$ miles to a second rocky point. A stream empties into the sea close east of this point. Its valley runs northwestward and is uncultivated near the shore. To the northwest, beyond where the railroad crosses the valley, there are rice paddies, and a lake lies about 3 miles inland where the valley narrows between low hills. The northeastern side of this valley is bounded by a chain of hills which ends in two spurs dividing the coastal plain back of the beach from the larger plain described above.

A series of beaches alternating with rocky points occupies the next four miles of coast; a few island rocks lie close off shore. This stretch is backed closely by hills; about midway along it, a narrow stream valley with a sandy mouth reaches

the shore. The coastal trail parallels the beach here, then turns inland along the valley, but the railroad continues through a series of tunnels near the coast.

A second stream valley breaks the hills near the western end of this subdivision. At the valley mouth there is a $\frac{1}{2}$ -mile stretch of beach between two small rocky promontories topped by hills.

Rice is under cultivation in both these narrow valleys and the hills are covered with grass, scrub pine and occasional coniferous trees.

3

This subdivision is indented by 3 major bights, and begins on the east with a $1\frac{1}{4}$ -mile stretch of irregular coast backed by hills. A rocky promontory begins this short stretch, and from its base westward a half-mile of shore has 2 sandy beaches separated by a small rocky point (beach area (25)). West of these beaches the coast is mainly rocky for the next mile, as far as the eastern entrance point of the first of the 3 bights mentioned above.

This bight is slightly over a mile wide at its entrance; its shores are all sandy with the exception of a short rocky stretch on the east. Settlements traversed by the railroad are scattered behind the sandy bayhead (beach area (26)) and the Tongdae-ch'on empties into the bight near the western entrance point, which is a small rocky promontory with an island close off shore. The valley of the Tongdae-ch'on extends westward and is partly cultivated in rice. The primary highway here emerges from the hills to approach the coast, and passes through the town of Kwanso-ri 1 mile up the valley.

West-southwestward of the last-mentioned entrance point, about $\frac{3}{4}$ mile of irregular coast leads to the thin, rocky promontory which is the eastern entrance point of the second major bight. This stretch consists first of about $\frac{1}{2}$ mile of rocky shore, followed by a small cove, the head of which is bordered by a beach (beach area (27)). An islet lies off the east shore of the cove, and its west shore is formed by a rocky promontory. Nan-do (*Ran-tō*)*, an islet 203 feet high, lies $1\frac{1}{2}$ miles south-southeast of the eastern entrance point of the cove.

The head of the second major bight (beach area (28)) is divided into two parts by a rocky point off which to southward is a string of detached rocks. Chak-to (*Jaku-tō*)**, a rocky islet, lies in the entrance $\frac{1}{2}$ mile south-southeast of this point. The eastern part of the bayhead has a scalloped shore with several rocky points interrupting short, sandy stretches; a number of rocks lie off shore. The western part of the bayhead is bordered by a beach behind which is a growth of scrub pine along the primary highway and railroad which closely parallel the shore. Low hills which back the eastern bayshore recede somewhat from the western half. Marshy areas lie between the foot of the hills to the west and the beach. The beach is terminated by a rocky point off which a reef extends southeastward. From this point 0.3 mile of rocky shore extends to Ch'ongnyong-mal.

Ch'ongnyong-mal (Chonnyon Kutsu) is the northern entrance point of Iwon-pakchi (*Rigen-bakuchi*; U.S.H.O. chart 5667), the southern entrance point of which is Changdong-

* This islet is shown on U.S.H.O. chart 3248, but not on PLAN 7, where it appears to have been confused with the islet mentioned in the next paragraph.

** Wrongly named on PLAN 7; see preceding footnote.

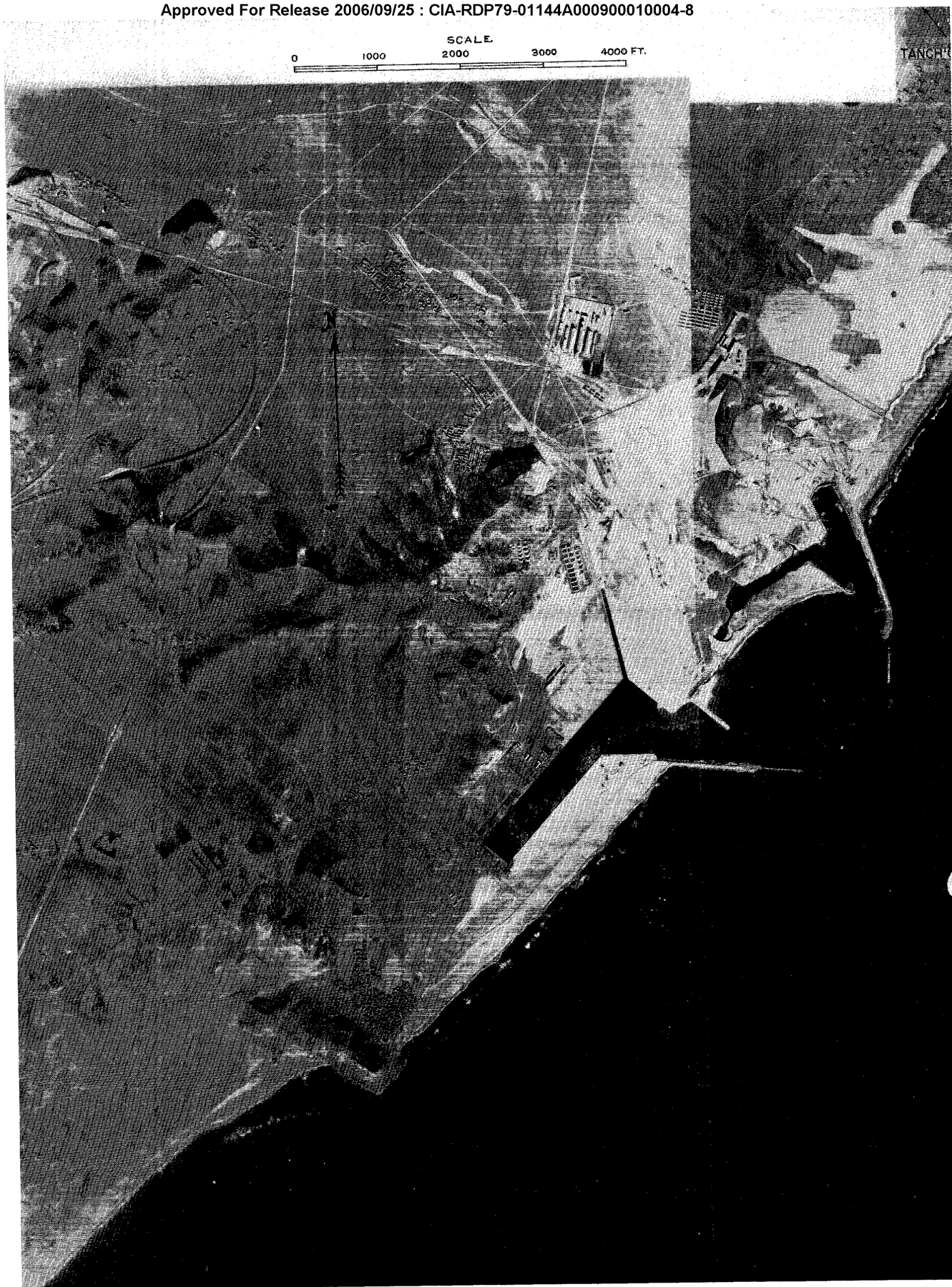
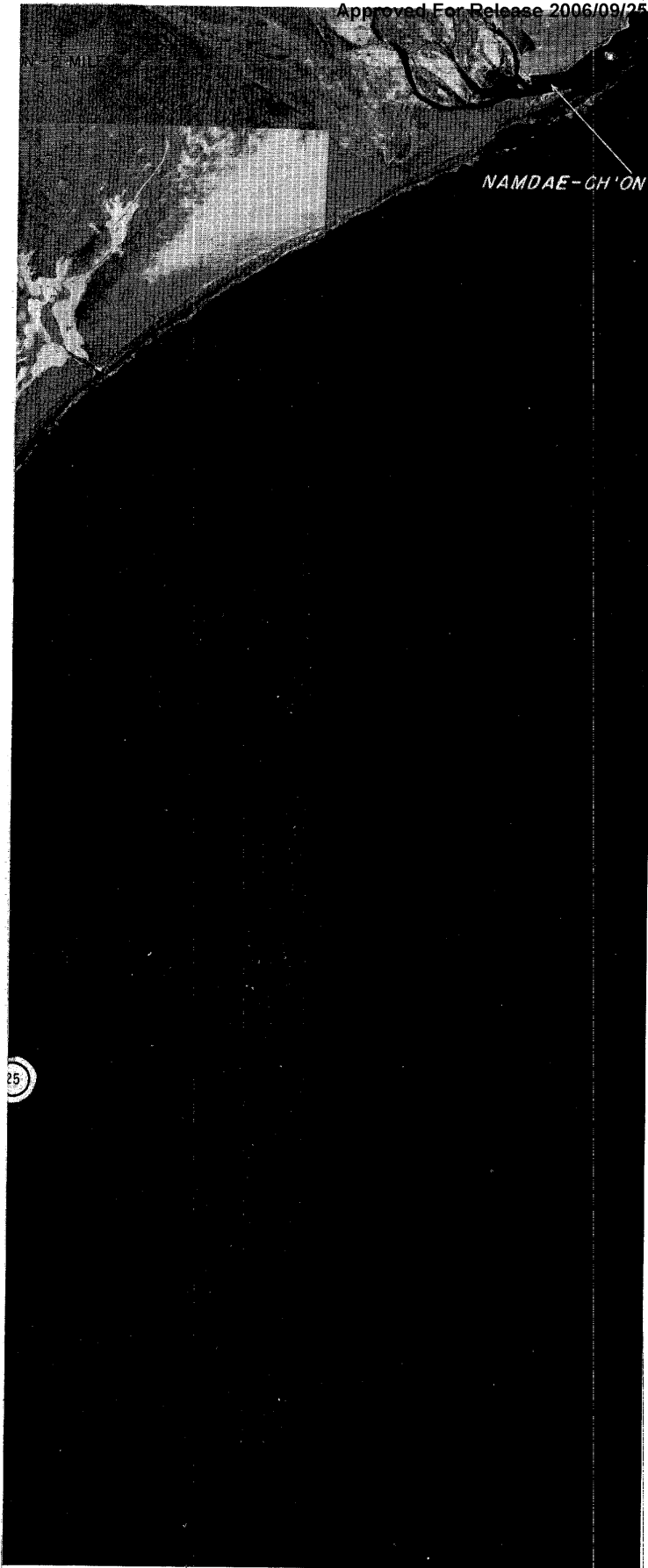


FIGURE IV - 14. East coast. Vicinity of Tanch'on (Tansen). Beach area (25), flanking partially constructed port of Yonam-ni (Ryūgan-ri). 128°56'E. U.S.H.O. chart 3248. A.A.F. 468BG/4MR44, dated 21 Decem

FIGURE IV-14
JANIS 75
CONFIDENTIAL



25).
Approximate position 40°25'N,
ber 1944.

Confidential

COASTS AND LANDING BEACHES

Page IV - 29

mal (*Chōdō-matsu*), a promontory 4 miles southward. Ch'ong-nyong-mal is a rocky southeast extremity of a ¾-mile-wide promontory, whose shores are irregular and rocky, rising steeply to hills covered with scrub pine, the highest elevation of which is 169 feet. There are 2 pocket beaches on the south side of the promontory (beach area (29)). On the west side of the base of the promontory lies the village of Changmun-ni (Kunsen), which has a station on the railroad on its northern outskirts and facilities for boats.

The long beach which forms the head of Iwon-pakchi (*Rigen-bakuchi*) (beach area (30)) begins at the southeast end of this village. A narrow lagoon, paralleling the beach, has an outlet on the northern third of the beach, which here is backed closely by a growth of scrub pine and other conifers.

The beach is broken about midway by the mouth of the Namdae-ch'on (*Nantai-sen*), whose broad valley backs the western part of the bayhead and is covered extensively by rice paddies. On the north side of the valley, about 1½ miles inland, is the town of Iwon (*Rigen*). To reach this town the highway makes a detour away from the central part of the beach, but closely parallels the northern and southern parts.

The railroad is nowhere more than ½ mile inland. A village lies back of the beach near the mouth of the Namdae-ch'on, and another village lies close to the south end of the bayhead near the mouth of a stream which enters the bay through a narrow lagoon. A growth of scrub pine and other conifers closely backs the southern half of the beach, bordering the highway.

Hills rise steeply back of the last stream mouth, and the railroad runs along their lower slopes, paralleling the shore about 500 yards inland.

About ¼ mile south of the stream mouth the beach terminates at the beginning of a rugged 3-mile stretch of coast which ends at Changdong-mal (*Chōdō-matsu*). Hills rise steeply from this rocky, indented shore. At the heads of the two largest coves are narrow beaches backed by a trail (beach area 31)). Rocks lie close off shore at several points, the largest being Kar-am (Kara Pau), 400 yards eastward of Changdong-mal. There is a considerable growth of coniferous trees on the hills, among areas of grass.

(2) Landing beaches.

TABLE IV - 5

LANDING BEACHES OF COASTAL SUBSECTOR 41 E
Reliability GOOD. (PLANS 6 and 7)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(24) S of Songjin. (PLAN 6).	Mostly obstructed.	Many pocket beaches; average length 0.1 mi.	50 to 75 ft.	1 on 10.	Surf heavy.	Sand and pebbles.	Rugged mountains with steep narrow valleys.	Coastal R.R. follows shore within 0.5 mi. through many tunnels; trails lead to highway, which turns inland at Songjin.
(25) Vicinity of Tanch'on. (PLANS 6 and 7; FIGURE IV - 14).	Partly obstructed; several small islands.	15.8 mi., interrupted by rivers and points, and by port of Yonam-ni.	150 to 200 ft.	1 on 25.	Surf heavy.	Firm sand.	Alternate hills and flats; flats narrow inland to steep valleys.	R.R. follows shore; highway 3 mi. inland on SW, farther on NE.
(26) Vicinity of Kwanso-ri. (PLAN 7).	Generally clear.	1.5 mi., interrupted by rocky point.	75 to 100 ft.	1 on 20.	Surf heavy.	Firm sand.	Narrow sandy river plain, partly in rice, trending W between hills.	R.R. follows shore; highway about 1 mi. inland.
(27) SW of Kwanso-ri. (PLAN 7).	Obstructed by small island.	0.4 mi.	75 to 100 ft.	1 on 20.	Surf heavy.	Firm sand.	Crescentic sandy strip backed by hills.	Trail through narrow valley to R.R. and highway.
(28) Vicinity of Ssangam-ni. (PLAN 7).	Obstructed by reef and island.	3.9 mi., interrupted by rocky point.	100 to 125 ft.	1 on 25.	Surf heavy.	Firm sand.	Sandy strip 0.2 to 0.5 mi. wide, backed by hills and swamp.	R.R. and highway follow beach.
(29) SE of Changmun-ni. (PLAN 7).	Partly obstructed.	2 small pocket beaches; each 0.1 mi.	25 to 50 ft.	1 on 15.	Surf heavy.	Sand and pebbles.	Rough steep slopes.	Isolated.
(30) Iwon-pakchi (<i>Rigen-bakuchi</i>). (PLAN 7).	Generally clear.	4.5 mi., interrupted by stream.	150 to 175 ft.	1 on 30.	Surf heavy; lighter at NE end.	Firm sand.	0.5 mi. flat wooded sandy strip, backed by rice paddies; two 1,000-ft. lagoons; hills flank beach.	Highway and R.R. easily accessible.
(31) Vicinity of Ch'aho. (PLAN 7).	Partly obstructed; several islands.	Pocket beaches; average 0.3 mi.	50 to 75 ft.	1 on 20.	Surf heavy except at Ch'aho.	Sand and pebbles.	Rough hills; narrow valleys cut through only at Ch'aho.	Highway and R.R. reach Ch'aho through narrow valleys; trail backs beaches N of Ch'aho.



F. Changdong-mal (*Chōdō-matsu*) to Ch'ongnyong-dan (*Seiryū-tan*).

(40°14'N, 128°40'E; 40°02'N, 128°04'E)

(PLAN 7; FIGURE IV - 15; U.S.H.O. charts 3248, 3249, and 5667)

(1) Coast.

The approach to this coastal subsector is clear except for the island of Mayang-do (*Bayō-tō*) in subdivision 3 and a few reefs and islets close to the shore. The 100-fathom line varies from about 6 miles off the northeastern part of the subsector to 18 miles at the southwestern end; the 10-fathom line ranges from about 1/8 mile to 1 1/4 miles off shore. Sand and mud make up the bottom sediment.

The coast is rugged and has numerous indentations, a few of which provide anchorages for medium or small draught vessels. There are several long strips of beach, and shorter ones alternate with steep, cliffy stretches along the remainder of this coast.

High mountains cover the entire area northward, and summits of over 1,000 feet rise at points only 1/2 to 3 miles inland along this subsector. The higher mountains northward are cut by streams and narrow valleys; the valley of the Namdae-ch'on is fairly wide.

Vegetation along the shore and inland closely resembles that in the foregoing subsectors.

1

This stretch is rugged but includes one good small bay and two mile-long sandy stretches backed by stream valleys. From Changdong-mal (*Chōdō-matsu*) southward 3 miles (U.S.H.O. chart 3248) the shore is steep and irregular with a series of coves, some of which have pocket beaches at their heads (beach area (31), TABLE IV - 5). The most salient of the points separating these coves is Chak-to (*Jaku-tō*), joined to the mainland by a narrow sand spit. Two cliffy islands separated by narrow shallow channels lie close off the tip of the peninsula terminating this 3-mile stretch. The southernmost island, Chon-ch'o-do (Chonchu To; Chonsuk-to on PLAN 7) is about 1/2 mile long and half as wide, topped by a 345-foot hill and edged with cliffs on its east side. Its southwestern extremity is the east entrance point of Ch'aho-hang (*Shako-kō*; U.S.H.O. chart 5667). The east shore of this deep baylet has steep, rocky stretches alternating with pocket beaches (beach area (31)). A reef-choked channel cuts through to the sea north of the smaller island mentioned above. The steep and rocky west shore gives way northward to a narrow beach (beach area (31)). The secondary port of Ch'aho (Shako) (Chapter VI) occupies the bayhead shore and part of the east and west shores.

The cliffy western entrance point of Ch'aho-hang terminates a ridge of high hills, and close off shore are rocks and an islet. From this point southwestward to Hwangdan-tan (*Kō-tan-tan*) (U.S.H.O. chart 3248) the coast continues rocky except for short beaches at stream mouths (beach area (31)), and becomes cliffy toward the end of the stretch. The cliffs continue for a short distance beyond Hwangdan-tan, but then recede slightly, giving place to a small open cove. Beyond the cliffy western entrance point of this cove the coast continues steep for about 1/2 mile, as far as the eastern end of a sandy beach. All this coastline is backed by steep grass-covered mountains.

The beach noted above (beach area (32), TABLE IV - 6) is backed by the valley of a stream which empties into the sea beside a village at the east end of the beach. Coniferous trees grow near the shore, and rice is under cultivation northward in the narrow steep-sided valley. The railroad and primary highway run along the west side of this valley.

The next 2 1/4 miles of shore are steep to cliffy, but include 1/2 mile of beach (beach area (32)) next to a final stretch of high cliffs. At the base of these cliffs the railroad (the alignment of which is more correctly shown on U.S.H.O. chart 3248 than on PLAN 7) skirts the water's edge before entering a tunnel. Following the cliffy segment is a beach just over a mile long (beach area (32)) which terminates southward at the mouth of the Kosan-ch'on. Wild grass and coniferous trees grow close behind the beach, and rice is cultivated in the valley of the Kosan-ch'on, largely on its southwest side.

Rugged coastline recommences just west of the mouth of the Kosan-ch'on and continues about 2 3/8 miles to the end of subdivision 1. Two miles of this stretch border a blunt promontory edged with rocky-to-cliffy points and rising to a 1,037-foot summit only 3/5 mile inland; its seaward extremity is Ungam-dan (*Yōgan-tan*), a rocky point, about 1/4 mile west of which is another small headland. Between these points there is a curving beach (beach area (33)) with a village behind it, traversed by a trail which parallels this whole stretch a few hundred yards from the shore.

The last 3/5 mile of this subdivision is occupied by two bights, each about 600 yards wide at the entrance and divided by Hwayu-dan (*Kayū-tan*), a cliffy point. The beaches in these bights (beach area (33)) are backed by steep slopes except where a stream enters the eastern bight. The steep hills surrounding the western bight end at Namsan-dan (*Nansan-tan*), cliff-edged, with rocks lying off shore.

2

Cliffs extend about 1/4 mile westward from Namsan-dan (*Nansan-tan*) to another headland, which is the northeastern entrance point of Sinch'ang-hang (*Shinsbō-kō*; U.S.H.O. chart 5667). Here a 141-foot hill rises close above the cliffs. Slightly less than 1/2 mile westward is Ch'ongnyong-dan (*Seiryū-tan*), another cliffy headland. Rocks lie off both these points and a sandy beach backed closely by steep hills curves between them (beach area (33)). Immediately west of Ch'ongnyong-dan is a small boat harbor which constitutes the port facilities of Sinch'ang (*Shinsbō*) (Chapter VI). Southwestward from the boat harbor, the bayhead is bordered by a broad sand beach about 3/4 mile long (beach area (33)). The mouth of the Namdae-ch'on breaks the beach near its southwest end and a spur of hills ending in cliffs approaches within about 100 yards of the water at about the center of the bayhead. West of this spur lies a pond and behind it a village, connected by a ferry to the small town of Sinch'ang (*Shinsbō*) on the southwest side of the river. The river approaches close to the shore beside the town, then parallels the water behind a sand spit, to flow into the bay near the beginning of the rocky west side of the bay.

About 1/4 mile inland the Namdae-ch'on divides around a sandy, reed-covered island about 700 yards long. Rice paddies at this point cover the west side of the valley, which broadens northwestward, joining the wide deltaic plain behind the next stretch of beach.

A 397-foot hill overlooks steeply the southwestern entrance point of Sinch'ang-hang (*Shinshō-kō*). Rocks lie off shore, and the rocky and cliffy coast continues about 1¼ miles to Yonggo-dan (*Ryūko-tan*, Yonko Kutchi), a promontory which is fronted east and west with cliffs. The hills behind this stretch of coast slope inland to the level of the plain northwest. Directly north of Yonggo-dan behind its 267-foot hill lie 2 small lakes among coniferous trees and scrub pine. The northern lake empties into the sea through a small stream, the mouth of which breaks the northeastern extremity of a crescentic beach about 9 miles long (U.S.H.O. chart 3248).

This beach (beach area (34)), which runs westward and then southwestward, is unbroken except by the mouths of streams which are distributaries of the Namdae-ch'on. Two large streams, the Kunamdae-ch'on and the Munsong-ch'on, flow into the sea a little more than a mile apart, along the first quarter of the sandy stretch. Each broadens into an irregular lagoon close behind the beach. Coniferous trees grow on sand hills near the shore along most of the stretch. Behind these, particularly to the northward among the distributary streams of the deltaic plain, large areas of rice are under cultivation. These continue along the valley north of the town of Pukch'ong, which is 11 miles inland and connected to the coastal railroad by a 5½-mile spur.

The inland plain, which is bordered on each side by steep hills rising to mountains, broadens westward about 1½ miles inland from the beach. From here southwestward spurs of hills extend increasingly toward the shore. Areas of plain and 3 lakes lie between the spurs.

The slender, cliffy point of Songdo-gap (*Shōtō-misaki*, Shoto Ko; U.S.H.O. chart 3249) terminates this long stretch of beach. Two and one-half miles north-northeast of it lies an islet, Kwaeam-do, 152 feet high and about ¾ mile off shore; from this islet a reef extends seaward the same distance. From Songdo-gap westward 1½ miles of high cliffs border the shore, interrupted by pocket beaches and giving way northwestward to a longer stretch of narrow sandy beach with steep hills close behind it (beach area (35)). This beach ends at a small cliffy promontory, Hach'ung-dan (Kaso Tan), the eastern entrance point of Yanghwa-man (*Yōka-wan*).

3

A series of narrow beaches, broken by rocky stretches, lines the east shore of Yanghwa-man (*Yōka-wan*) (beach area (35)). A chain of hills parallels the shore closely and a village lies about 1 mile north of Hach'ung-dan (Kaso Tan). The bay-head is bordered by a curving beach (beach area (36)), broken by the mouths of 2 streams and backed by a small valley which branches in two on either side of a spur of hills. Coniferous trees grow immediately behind the beach, and certain areas of the eastern valley are cultivated in rice. Villages which lie at either end of the bayhead are joined by the coastal road and railroad. About 2 miles of irregular terrain form the west shore of Yanghwa-man. A beach-lined cove (beach area (36)) occupies about ⅔ mile, separating 2 steep, rocky stretches which are backed by hills. The longer stretch, terminating at Saekchaktan (Shokusaku Tan), the cliff-edged western entrance of Yanghwa-man, rises precipitously to hills. Rocks lie close off the points in this bay, but the approaches to the beaches are generally clear.

The next 7½ miles of coast westward constitute the north shore of Sinp'o-myōji (*Shinbo-byōchi*), the roadstead between Mayang-do (*Bayō-tō*) and the mainland. Four points and 3 coves occupy 1¾ miles at the east end of this shore. Spurs of hills bordering the first two coves terminate at the 3 rocky headlands which are the entrance points of the coves. Rocks lie off the east and west shores of both coves, and each has a beach at its head (beach area (37)). The cliff-edged islet of Taegu-do (*Daikyū-tō*) lies halfway across the entrance of the second cove. At the head of this cove are 3 piers, forming a minor part of the port facilities of Sinp'o (*Shinpo*) (Chapter VI). The port area now extends not only along the head of the third and largest cove, Sinp'o-hang (*Shinbo-kō*), as shown on U.S.H.O. chart 3249, but along the whole 2 miles of curving sandy shore between Saam-dan (Shigan Tan) and the base of Pongsu-pando (*Hosui-bantō*), the rugged peninsula, 685 feet high, which terminates the north shore of Sinp'o-hang.

Sinp'o-myōji (*Shinbo-byōchi*) is bounded on the south by the island of Mayang-do (*Bayō-tō*), about 3½ miles long (FIGURE IV - 16). Its deeply indented north shore leaves a channel from ¾ to just over 1 mile wide running parallel with the mainland. Shoals off the north and south shores of the channel reduce its width near the western end.

A chain of hills rises steeply along the south shore of Mayang-do, the highest attaining 566 feet. Cliffs and rocks edge the water line and rocks lie close off shore. The north shore is sharply indented by 3 bays, and spurs of hills terminate on the promontories which separate them. Pogulgumi-dan (Hoturukumi Tan), a narrow-necked promontory, which is cliff-edged to seaward, forms the east entrance point of Munamni-man (Bunganri Wan), the largest and easternmost of the three bays. There is deep water in all three hill-encircled bays, and a rocky islet lies near the eastern entrance point of the westernmost one. Their shores are lined with narrow sand-and-pebble beaches backed by cultivated hill slopes (beach area (38)). Several fishing villages within the bays are served by small piers; there are 8 such piers along the shores of the central bay. The west shore of the island is indented by a shallow bight extending ¾ mile inland. The southwestern entrance point is low and sandy and extends into a long spit northeastward which leaves only a narrow channel between its end and the north shore. A boat harbor occupies the east end of the bay thus enclosed, and a mud flat the west end. The shores of the bay are mainly low and sandy (beach area (38)); parts of them are bordered by salt pans.

Mayang-do has small villages on the shores of its bays; its vegetation is wild grass and scrub pine on the hills; and cultivated rice grows in lowland areas.

The southwestern extremity of Pongsu-pando (*Hosui-bantō*) is the eastern entrance point of an open bay. Slightly over 4 miles away is Ch'ongnyong-dan (*Seiryū-tan*), the western entrance point, and the termination of this subsector. The head of this bay is fronted by two beaches divided by about 1 mile of rocky shore which juts seaward to a rocky point with detached rocks lying off its end. The first and longer stretch of beach (beach area (39)) begins on the east shore of the bay where Pongsu-pando (*Hosui-bantō*) narrows to a low, sandy neck. A village lies back of the beach here, beyond which the sandy bayhead stretches northwestward some 2½ miles (U.S. H.O. chart 3248), terminating at the mouth of the Tongdae-

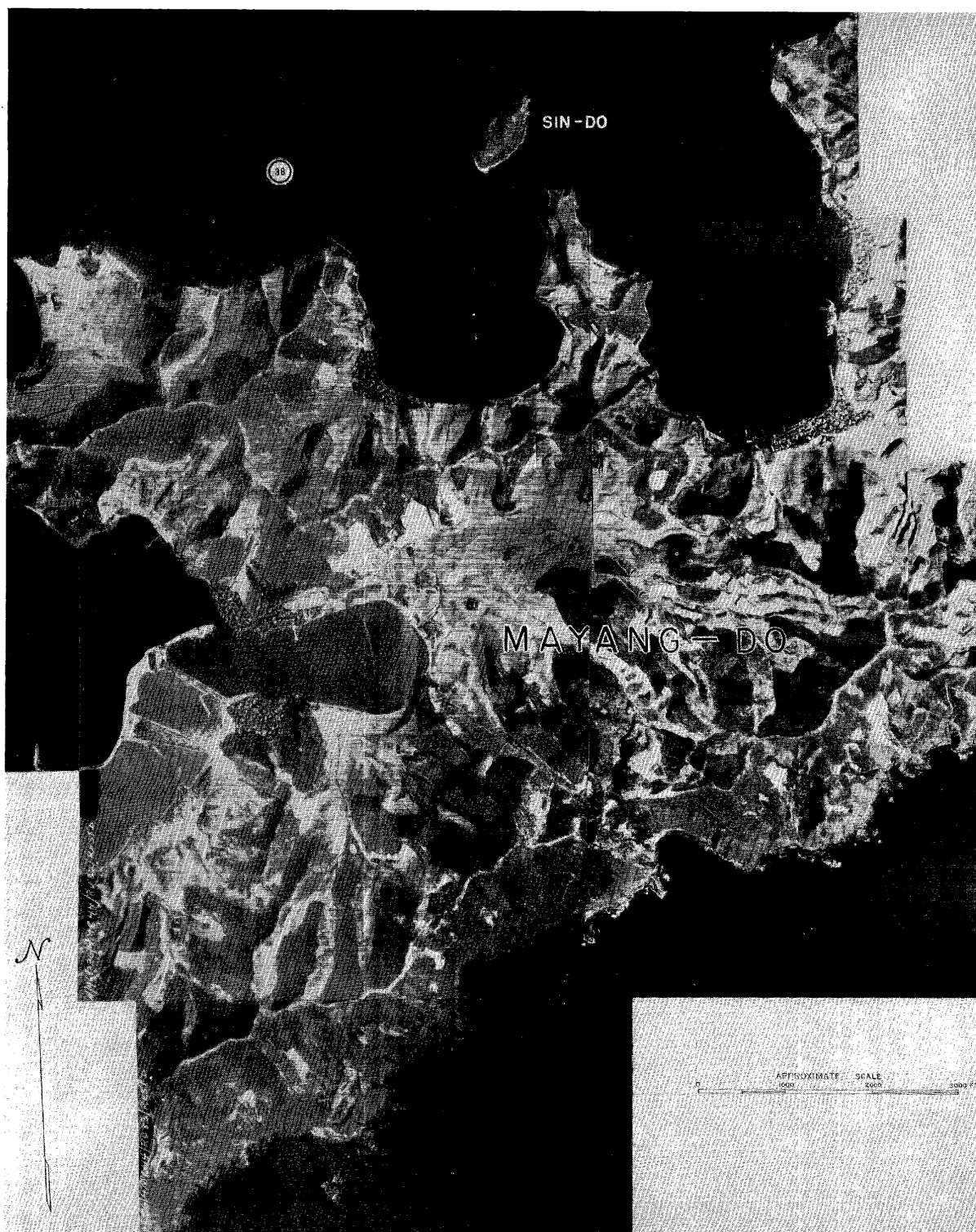


FIGURE IV - 16. East coast. Mayang-do (*Bayō-tō*). Beach area (38).

North coast of island forms south side of Sinp'o-myōji (*Shinbo-byōchi*), the roadstead fronting the port of Sinp'o (*Shinbo*). Approximate position 40°00'N, 128°12'E; U.S.H.O. chart 3249. A.A.F. 468BG/4MR44, dated 21 December 1944.

ch'on. A sandy coastal plain backs the entire beach and a village lies about $\frac{1}{4}$ mile inland midway along the stretch; here a spur of hills terminates, dividing the plain in two parts. An irregular lagoon lies close behind the beach $\frac{1}{2}$ mile west of the village, among coniferous trees which grow near the shore along this whole stretch. The plain has wide areas of rice paddies which are also found some miles inland along the valley. The small town of Yongdae-ri lies about $1\frac{1}{2}$ miles inland where the valley narrows between mountains covered with

coniferous trees. Close west of the braided streams of the Tongdae-ch'on, the mountains rise steeply to a 1,096-foot summit.

The next beach, a little over 1 mile long (beach area (40)), is broken near either end by the mouth of a stream. Coniferous trees grow close to the shore, which is backed by a small plain cultivated in rice. Villages dot the plain and the stream valley inland. Another village at the foot of forested hills borders the sandy west shore of the bay close to Ch'ongnyong-dan (*Seiryū-tan*), which is rocky and has rocks lying close off shore.

(2) Landing beaches.

TABLE IV - 6

LANDING BEACHES OF COASTAL SUBSECTOR 41 F Reliability GOOD. (PLAN 7)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(32) W of Hwangdan-tan (<i>Kōtan-tan</i>).	Partly obstructed by rocks.	4 beaches; average 0.8 mi.	100 to 125 ft.	1 on 25.	Surf heavy; drift N and S from center of area.	Firm sand.	NE and SW beaches backed by small river plains; center beaches by hills.	Coastal highway and R.R. accessible; tunnels on R.R.
(33) E of Sinch'ang.	Generally obstructed.	Pocket beaches; up to 0.5 mi.	50 to 75 ft.	1 on 20.	Surf heavy; drift S at Sinch'ang.	Sand and pebbles; sand at Sinch'ang.	Rough hills.	Isolated except for poor trails.
(34) NE of Songdo-gap.	Generally clear; reef and island on S.	9.1 mi., interrupted by streams.	150 to 175 ft.	.1 on 30.	Surf heavy.	Firm sand.	Strip of pine-covered sand hills, backed by hills, lake and swamp in SW, by rice fields in NE.	Railroad accessible; improved road within 1 mi. of NE part, trail close behind SW part.
(35) Yanghwa-man (<i>Yōka-wan</i>); E shore.	Partly obstructed by rocks.	3.7 mi., interrupted by many rocky points.	50 to 75 ft.	1 on 15.	Surf heavy.	Firm sand.	Rough hills.	Trail skirts shore.
(36) Yanghwa-man (<i>Yōka-wan</i>); N and W shores.	Generally clear; some rocks.	4.3 mi., interrupted by 0.3 mi. cape.	125 to 150 ft.	1 on 25.	Surf heavy with S winds.	Firm sand.	Small flat backed and flanked by mountains.	R.R. and improved road follow shore within 0.5 mi.
(37) E of Sinp'o.	Partly obstructed; rocks and island.	Pocket beaches; average 0.3 mi.	50 to 75 ft.	1 on 15.	Surf heavy with SE winds.	Sand and pebbles.	Slopes rising to steep hills.	R.R. and improved road 1 mi. inland over steep hills.
(38) Mayang-do. (FIGURE IV - 16)	Generally clear; occasional rocks.	Pocket beaches; average 1 mi.	50 to 75 ft.	1 on 15.	Surf light.	Sand and pebbles.	Hilly island, cultivated slopes.	Trails.
(39) Vicinity of Yongdae-ri.	Generally clear.	3 mi., interrupted by stream mouth near W end.	50 to 75 ft.	1 on 25.	Surf light except with S winds.	Firm sand.	Sandy strip 1,500 ft. wide, backed by valley in rice; town of Yongdae-ri, 0.5 mi. inland of W part.	R.R. and improved road within 0.5 mi. of center, leading E to Sinp'o.
(40) W of Yongdae-ri.	Generally clear.	1.2 mi., interrupted by streams.	100 to 125 ft.	1 on 25.	Surf moderate to heavy with S quadrant winds.	Firm sand.	Narrow sand flat backed by rice-covered valley flanked by steep hills.	R.R. and improved road within 1 mi.

G. Ch'ongnyong-dan (*Seiryū-tan*) to Yongdo-dan (*Eigyo-tan*).

(40°02'N, 128°04'E; 39°37'N, 127°34'E)

(PLANS 7 to 9; FIGURE IV - 17; U.S.H.O. charts 2580, 3248, and 5668)

(1) Coast.

This coastal subsector has clear approaches except for small islands in the bays and some shoals close to shore. The bottom gradient is less steep than in the immediately preceding subsectors, with the 10-fathom curve from about 600 yards to

about $4\frac{1}{2}$ miles and the 100-fathom curve from 18 to 29 miles off shore. The bottom sediment is fine sand and mud.

The coast along the first two subdivisions is largely sandy, but is marked at frequent intervals by hill spurs reaching to the water's edge. A low, sandy shore comprises most of the third subdivision, which includes the port of Hungnam (*Kōnan*).

The inland terrain continues high north and northwest of this coastal subsector. Moderately high hills back the coast along the northern part, become somewhat high near the center, and give way to a broad alluvial plain behind the southern part.

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COASTS AND LANDING BEACHES

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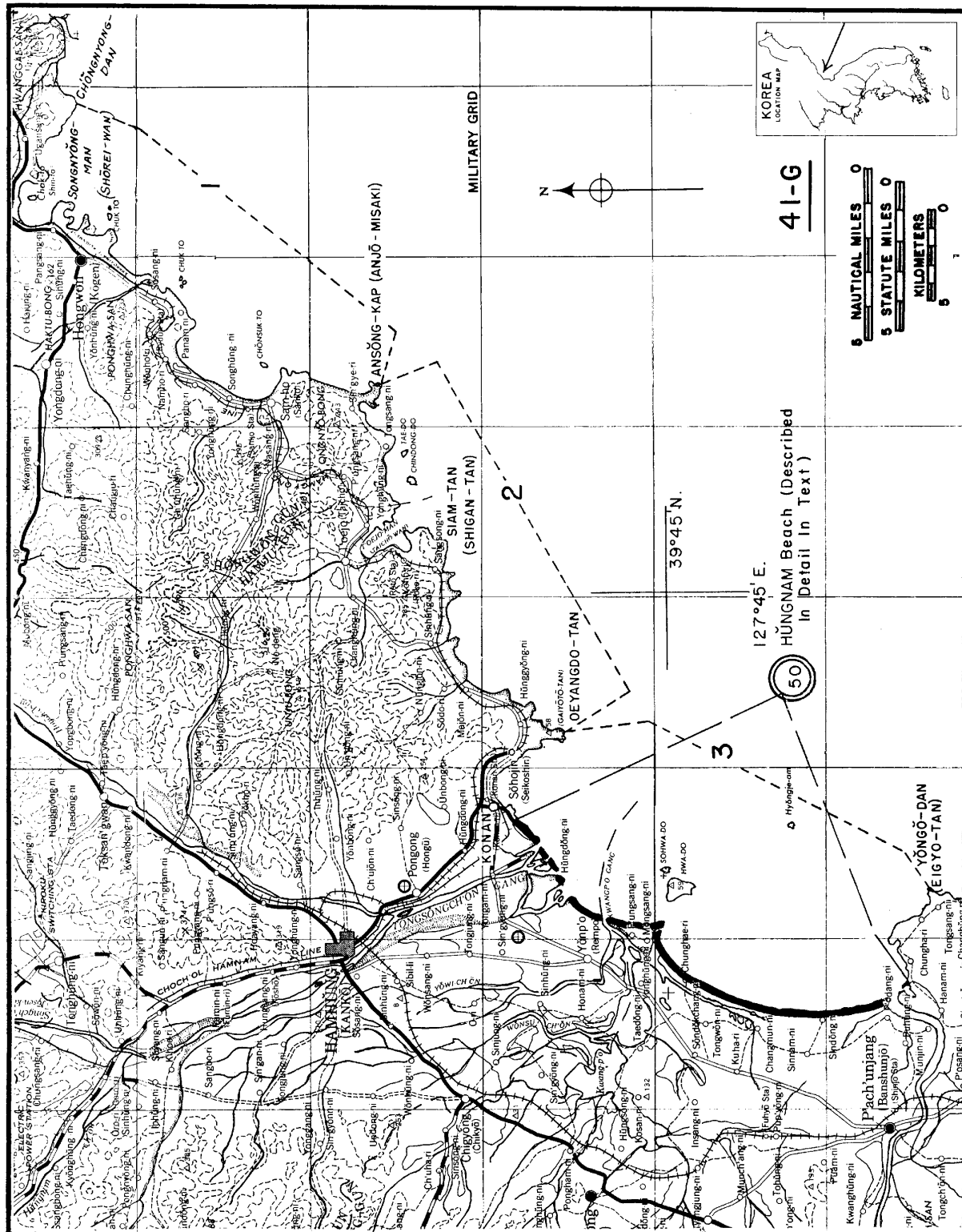


FIGURE IV - 17. Coastal subsector 41 G.
Beach areas are shown on PLANS 7, 8, and 9.

The hills and mountains are covered with wild grassland alternating with forests of conifers including patches of scrub pine. Rice is extensively cultivated in all the low areas.

1

The bay called Songnyong-man (*Shōrei-wan*) occupies the first 3½ miles of this subdivision (U.S.H.O. chart 3248). This bay is divided into 3 bights by cliff-edged promontories. It has an islet, Chuhungmyonwa-am (Ga Gan), lying outside the middle of its entrance and another islet, Chak-to, lying inside its central bight. Ch'ongnyong-dan (*Seiryū-tan*), the north-eastern entrance point, is followed to northwestward by 1½ miles of mainly steep coast backed by hills. This stretch ends at the head of the first bight, where there is about a mile of sandy beach (beach area (41), TABLE IV - 7). The western shore of this bight is cliffy throughout and rises precipitously to a 511-foot hill.

The head of the central bight is bordered by 1½ miles of almost continuous sandy beach (beach area (42)). Near a stream mouth which breaks the beach just west of its center, some rice is grown, and the valley behind the beach is covered with rice paddies. The village of Namyang-ni lies ½ mile behind the center of the beach, and ½ mile inland from that village is the town of Tongp'o-ri, at the foot of a spur of hills which divides the valley into 2 branches, the eastern branch being narrow and precipitous.

The southwest shore of this central bight is an almost continuous stretch of cliffs. The railroad and highway, which parallel the bayhead behind the beach, run ¾ mile southward along the top of these cliffs. The cliffs then curve east-southeastward along a narrow peninsula edged with reefs, south of which is the third of the 3 bights making up Songnyong-man.

This third bight is divided into 2 baylets of almost equal size by a long, cliffy promontory connected to the bayhead by a sand spit. The head of the northern baylet has a scalloped shore with a small rocky point separating 2 short sandy stretches (beach area (43)). The southern baylet is an anchorage, fronting the town of Hongwon (*Kōgen*, Zenshin), which lies behind the southern portion of the bayhead and extends inland. A sandy beach about ¾ mile long fronts the head of the anchorage (beach area (43)). It is backed by lowland rising to hills ¾ mile inland behind the above-named town. Grass and conifers grow behind the uninhabited north portion of the beach, and the cliffy promontory which terminates the beach southward is covered with wild grass. A narrow reef extends eastward from the point, and midway along it is Chuk-to, an island rock 26 feet high.

At Hongwon (*Kōgen*, Zenshin) the primary highway turns inland; an improved road branches from it and follows the coast southwestward, generally paralleling the railroad.

The next 3½ miles southwestward (U.S.H.O. chart 5668) is made up of low, sandy beach with a short cliffy stretch at either end (beach area (44)). The northern half of the long beach is backed by the low valley of the Sodae-ch'on (Seidai Sen), which has several valleys branching inland and is only sparsely cultivated in rice. Behind the beach and inland about ½ mile as far as the railroad and improved road, wild grass and a few conifers grow. South of the center of the beach the Sodae-ch'on empties into the sea after running parallel with the shore behind a sand spit almost ½ mile. The mouth of the

river is narrow, and its south side rises to a bluff and a low hill. Behind the beach and as far upstream as a confluence about 3 miles inland, the river is broad, with numerous islands.

About ½ mile seaward off the river mouth lies a group of cliff-bordered islets. The beach continues southwest to the mouth of a stream off which lies another islet. West of the stream is a broad, cliffy headland rising to a 407-foot summit and terminating southward in Haeojin-dan (*Kaigyoshin-tan*). About ½ mile behind the mouth of the Sodae-ch'on a group of hills rises to north and westward. Between these and the hills lying behind Haeojin-dan lies a lake with rice paddies near it and an outlet through the stream at the southwest end of the beach.

The coast between Haeojin-dan (*Kaigyoshin-tan*) and Ansong-kap (*Anjō-misaki*, Anjo Ko), terminating this subdivision, is divided equally between a bay and a stretch of low shore backed largely by hills. A group of island rocks, To-am (To Gan), not shown on PLAN 9, lies in the center of the bay entrance, and a larger islet, Chonch'o-dō (Choncho Somu; Chonsuk-to on PLAN 9), lies in the southern part of the entrance. Haeojin-dan and a second point close westward, rocky and backed by cliffs, form the northern entrance point, followed northwestward by ¾ mile of rocky shore backed by hills. The low, sandy shore of the bayhead then begins, curving southwestward and backed closely by dunes along its northern half (beach area (45)). Two stream mouths break the beach toward the south end. Several villages, traversed by the railroad and improved road, lie close to the beach, and small areas of cultivated rice interrupted by the spurs of hills extend inland. The town of Samho backs the south end of the beach and part of the south shore of the bay. Just east of the town the beach gives way to a rocky point from which a pebbly shore follows around a cove leading to another rocky point which is the southern entrance point of the bay.

The next 1½ miles of coast are closely backed by steep hills and consist of short pebbly or sandy beaches divided by a series of low rocky points.

The hills recede from the remainder of the shore, which is a beach closely backed by dunes (beach area (46)). The hilly, irregular cape which terminates this beach to southward has a round, cliff-crowned point projecting northeastward. A quarter-mile south of this point is rocky Ansong-kap (*Anjō-misaki*, Anjo Ko), off which lies a detached rock.

2

High hills close to shore make this stretch of coast rugged and irregular except at the southwestern end where the hills recede slightly from the shore.

An open bay indents the coast just west of Ansong-kap (*Anjō-misaki*, Anjo Ko), and a smaller bay, Mugye-p'o (Mokei Ho), further indents the head of this bay. From Ansong-kap a half-mile of rocky shore rising steeply to a 264-foot hill terminates at a narrow promontory, which projects southwestward. The tip of this promontory is the southeastern entrance point of Mugye-p'o. A beach encircles the head of this baylet (beach area (46)). Its short southern and western shores are rocky, backed by hills; the remainder of the baylet is backed by sandy lowland, the eastern portion of which is the neck of the peninsula terminating in Ansong-kap. A point with a reef extending

off it is the northwestern entrance point of Mugye-p'o. High cliffs, broken by a few short rocky spots and fringed with reefs, edge the entire shore from this point to the hilly headland off which, at the end of a reef, lies Tae-do (Dai To).

Between the headland just mentioned and the eastern entrance point of T'oejo-man (*Taichō-wan*), 1¾ miles westward, is an open bay scalloped with rocky points and sandy-shored coves. The 3 largest coves, the central and western of which are seen on FIGURE IV - 18, are backed by narrow valleys extending inland between chains of hills which slope rather steeply to the water's edge at other points. At the head of each of these coves is a beach (beach area (47)), and in the westernmost valley rice is under cultivation. The hilly island of Chindong-do lies about midway off the entrance of this open bay, and reefs fringe most of the points.

The deep water of T'oejo-man (*Taichō-wan*) (FIGURE IV - 18) has clear approaches except for one reef extending about 200 yards off the eastern entrance point. This entrance point, cliffy along its western side, is succeeded northward by steep rocky shore which continues irregularly about a mile along the east side of T'oejo-man. One cove in this stretch has a pocket beach at its head (beach area (48)); back of the entire stretch of shore rise high hills forested with conifers. The northern portion of this east shore includes a longer beach (beach area (48)) and a rocky point near the bayhead. A village backed by a small stream valley lies behind the south end of the beach, which is paralleled close to the water by the railroad and improved road. Hills rise steeply behind this beach.

The head of T'oejo-man (*Taichō-wan*) is bordered by a sandy beach (beach area (48)), close behind which is the town of T'oejo (*Taichō*). Two streams empty into the bay near the eastern end of the beach and a third one enters the bay at the west end. The lowland behind the head of the bay spreads along several stream-valleys, separated by the spurs of hills, and is planted to rice.

The steep west shore of T'oejo-man (*Taichō-wan*) has a series of rocky points alternating with sandy-edged coves. High hills forested with conifers back this whole shore. The railroad roughly parallels the shore through a series of tunnels for about a mile, and a trail follows the railroad, staying above ground.

A baylet, Yongho-myoji (Roko Byochi), indents the southern part of this side of T'oejo-man. Its entrance points are cliffy promontories. A beach backed by a stream valley and a village border the head of the baylet. The southern entrance point of Yongho-myoji is followed to southward by cliffs giving way to a rocky cove which, in turn, leads to another cliff-edged promontory, the western entrance point of T'oejo-man. About ¾ mile more of cliffy-to-rocky coast terminates at the rugged cape, Siam-tan (*Shigan-tan*, Porupau Kutchi), off which lies a detached rock.

Six and one-half miles southwestward from Siam-tan is Oeyangdo-tan (*Gaiyōtō-tan*, Panyansomu Kutchi). Between the two headlands the coast follows a rough arc (FIGURE IV - 18), and consists of a series of sandy beaches separated by rocky spurs (beach area (49)). The eastern half is closely backed by high hills, but along the western half of the arc the hills recede somewhat from the coast. The railroad and improved road pass close behind the beaches.

Between Oeyangdo-tan and Taegi-dan (*Daiki-tan*, Kunnegi Kutchi), a salient promontory 1½ miles westward, there is one

small cove and two larger coves of almost equal size separated by a narrow, steep promontory. Two small beaches separated by a rocky point form the head of the eastern of the larger coves, and a beach borders the entire head of the western one.

A sandy beach ½ mile long curves northwestward and westward from the base of the hilly peninsula terminating in Taegidan; a village lies behind the eastern end of the beach. West of the beach is a ½-mile stretch of rocky-to-cliffy shore, with a series of points fringed by reefs. Mountains which attain a 1,253-foot summit only a mile inland rise behind this stretch of shore.

West of this rocky stretch is a sandy beach 500 yards long at the mouth of a stream valley, cultivated in rice; the stream reaches the sea at the east end of the beach.

The 1-mile stretch of shore between this beach and the next is edged with rocky-to-cliffy points, interrupted by a short sandy stretch just beyond midway. The next beach begins near the mouth of a stream and runs south-southwestward 1¼ miles to Penchi Kutchi, a hilly point with reefs close off shore. Behind the beach grow coniferous trees, and back of these are rice paddies along a small stream-bed. The improved road and the railroad are at the foot of hills about ⅓ mile inland. Hills lie inland behind this beach except to northward where, in the stream valley, rice is under cultivation.

The 2-mile stretch from Penchi Kutchi south-southwestward to Oeyangdo-tan (*Gaiyōtō-tan*, Panyansomu Kutchi) comprises several short beaches separated by rocky-to-cliffy promontories. Low hills covered with scrub pine back the first ½-mile beach. Wild grass growing along the next three short beaches is backed by rice paddies. A hilly peninsula with the cliff-edged headland of Oeyangdo-tan at its southeastern extremity terminates subdivision 2.

3

Hamhung-man (*Kankō-wan*) makes up this subdivision. Its northern entrance point is Oeyangdo-tan (*Gaiyōtō-tan*, Panyansomu Kutchi); its southern entrance point, Yongo-dan (*Eigyō-tan*), is 11½ miles away (FIGURE IV - 19). Hamhung-man is divided into 2 bights by Hwa-do (*Ka-tō*), a small inhabited island which rises to a 200-foot hill, covered with grass and conifers. A reef and 2 islets lie northeastward of Hwa-do, which is only ¾ mile from a low, sandy point on the mainland.

At the northern end of the northeastern bight is Sohojinhang (*Seikoshin-kō*; U.S.H.O. chart 2580), a roadstead sheltered on the east by the peninsula terminating in Oeyangdo-tan (*Gaiyōtō-tan*). At the head of the roadstead is the port and city of Hungnam (*Kōnan*)* (Chapters VI and VIII). Southeast of the main port facilities are 2 beaches (beach area (49)) separated by the wooded knoll called Ch'o-bong (*Sō-bō*) (FIGURE IV - 20) and by a fishing harbor, not shown on U.S.H.O. chart 2580, which has been constructed between the knoll and the northern end of the white-faced cliffy spur to northward of it (FIGURE IV - 18). The southern beach is 750 yards long and is backed by the low sandy isthmus which separates the hill group terminating in Oeyangdo-tan from the mainland hills to the north (FIGURE IV - 20). The northern beach extends over ½ mile northwestward to the narrow sand

* This city, being of recent growth, is not shown by the appropriate symbol on PLAN 9. Its population in 1941 was estimated at 140,000.

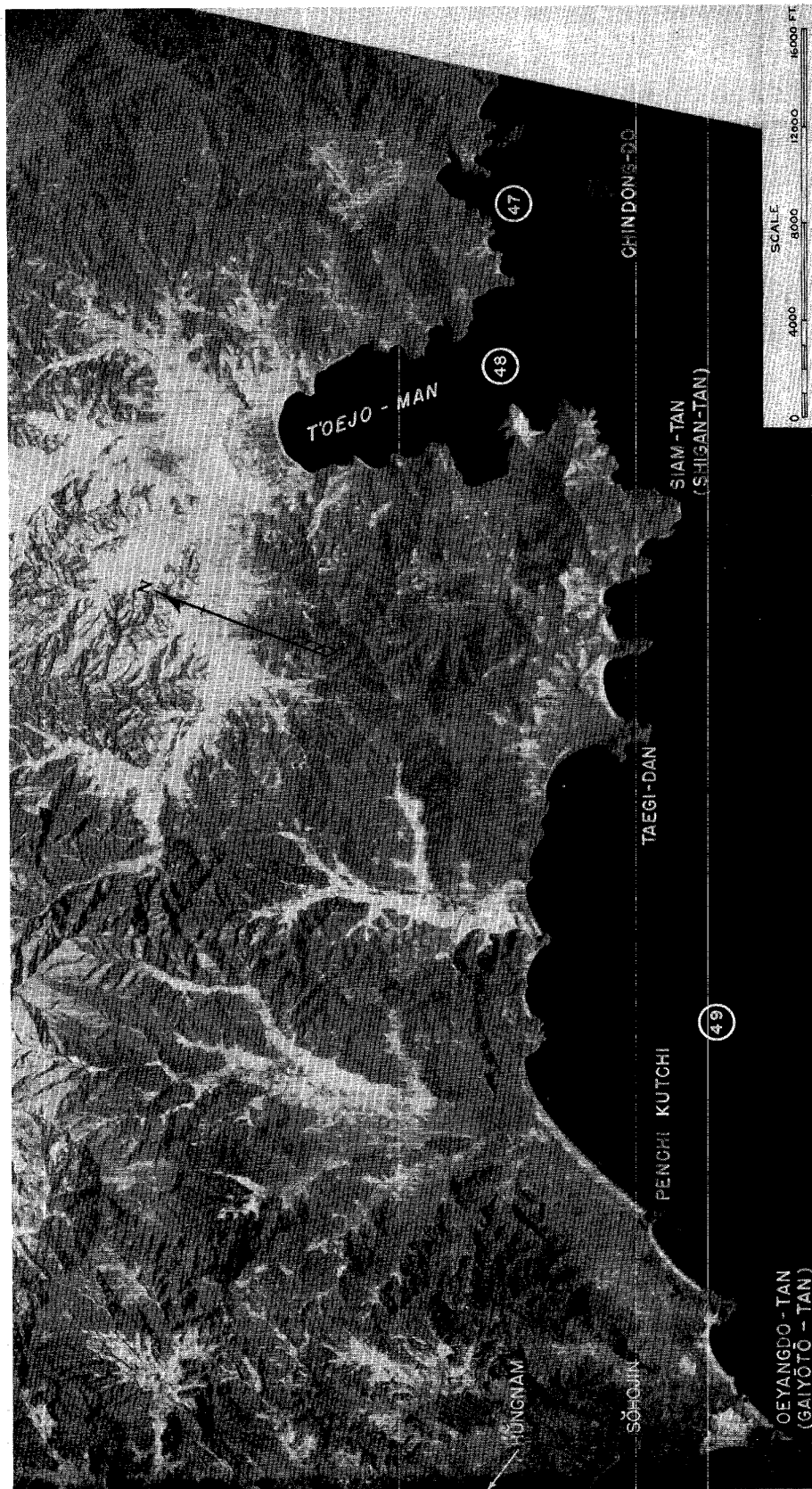


FIGURE IV - 18. East coast. East of Honan (Kōnan). Beach areas (47) to (49).
Approximate position of T'oejo-man (Taichō-man), 39°53'N, 127°48'E; U.S.H.O. chart 5668.
A.A.F. 468BG/4MR44, dated 21 December 1944.

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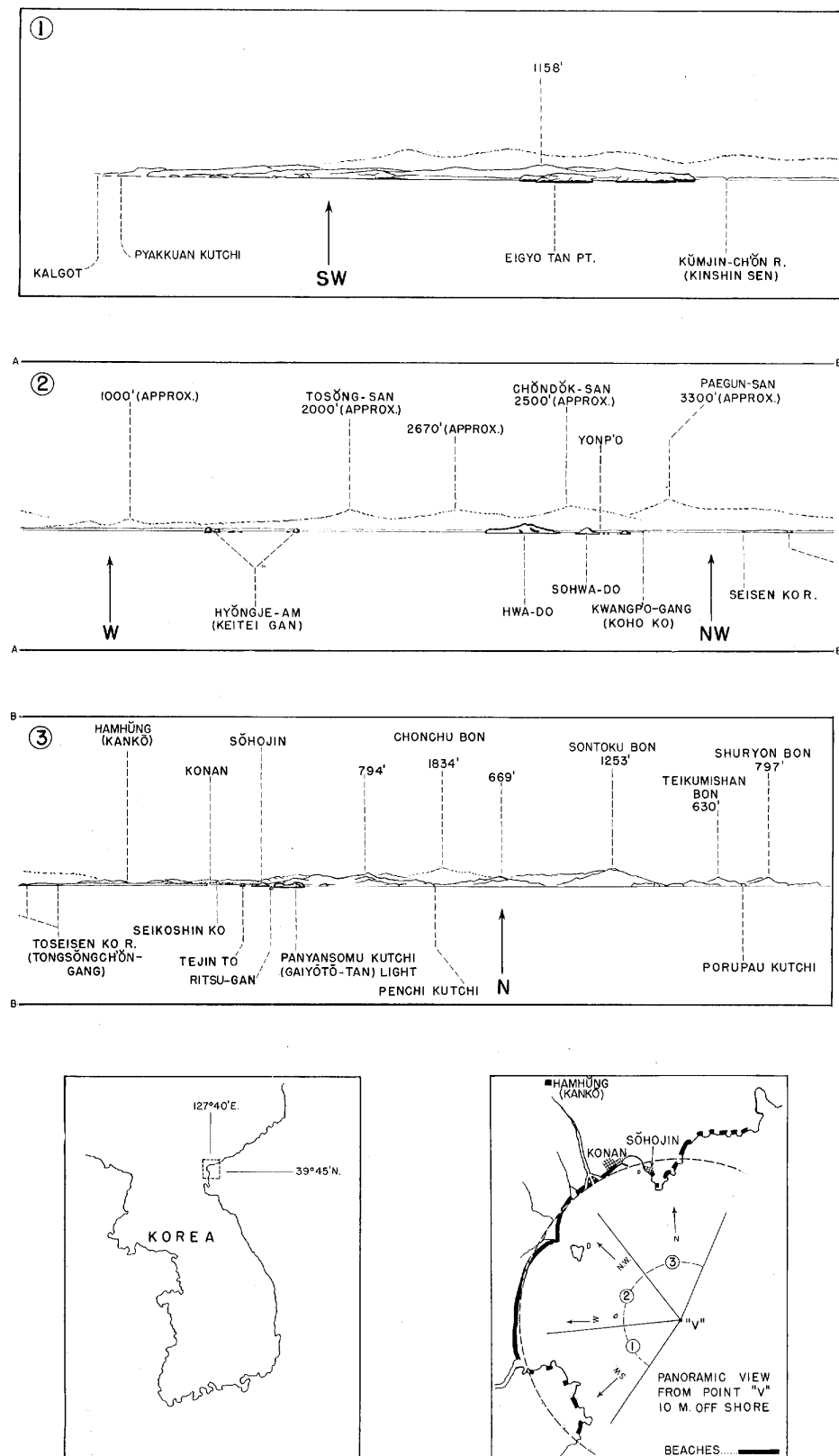


FIGURE IV-19. East coast. Hamhung-man (Kankō-wan). Beach areas (49) to (51). Panoramic coastal sketch. Approximate position of Hungnam (Kōnan), 39°50'N, 127°37'E. Paegun-san is the correct name of the peak wrongly named Paeksol-san on PLAN 9; other names not appearing on PLAN 9 are from U.S.H.O. charts 2580 and 5668.

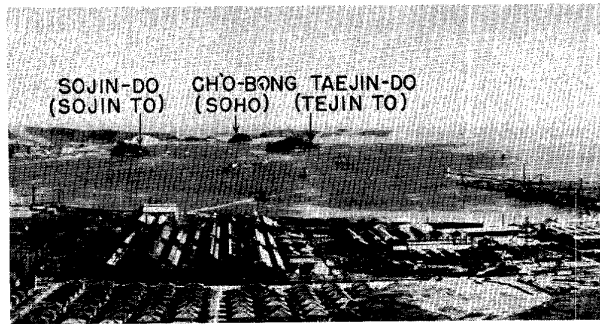


FIGURE IV - 20. East coast. Sohojin-hang (*Seikosbin-kō*). Beach area (49). View southeastward over inner harbor of Hungnam (*Kōnan*). Right center background, Oeyangdo-tan (*Gaiyōdō-tan*, Panyansomu Kutchi). Approximate position $39^{\circ}50'N$, $127^{\circ}38'E$; U.S.H.O. chart 2580.

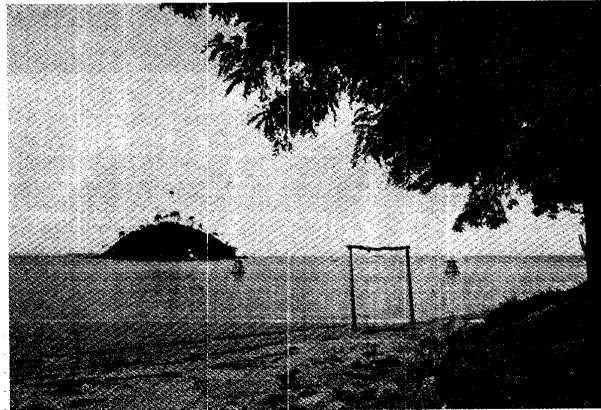


FIGURE IV - 21. East coast. Sobojin-hang (*Seikosbin-kō*). Beach area (49). View WSW or SW from beach near Sohojin (*Seikosbin*, Seikori) toward Taejin-do ('Tejin To). Approximate position of island, $39^{\circ}49'N$, $127^{\circ}38'40''E$; U.S.H.O. chart 2580.

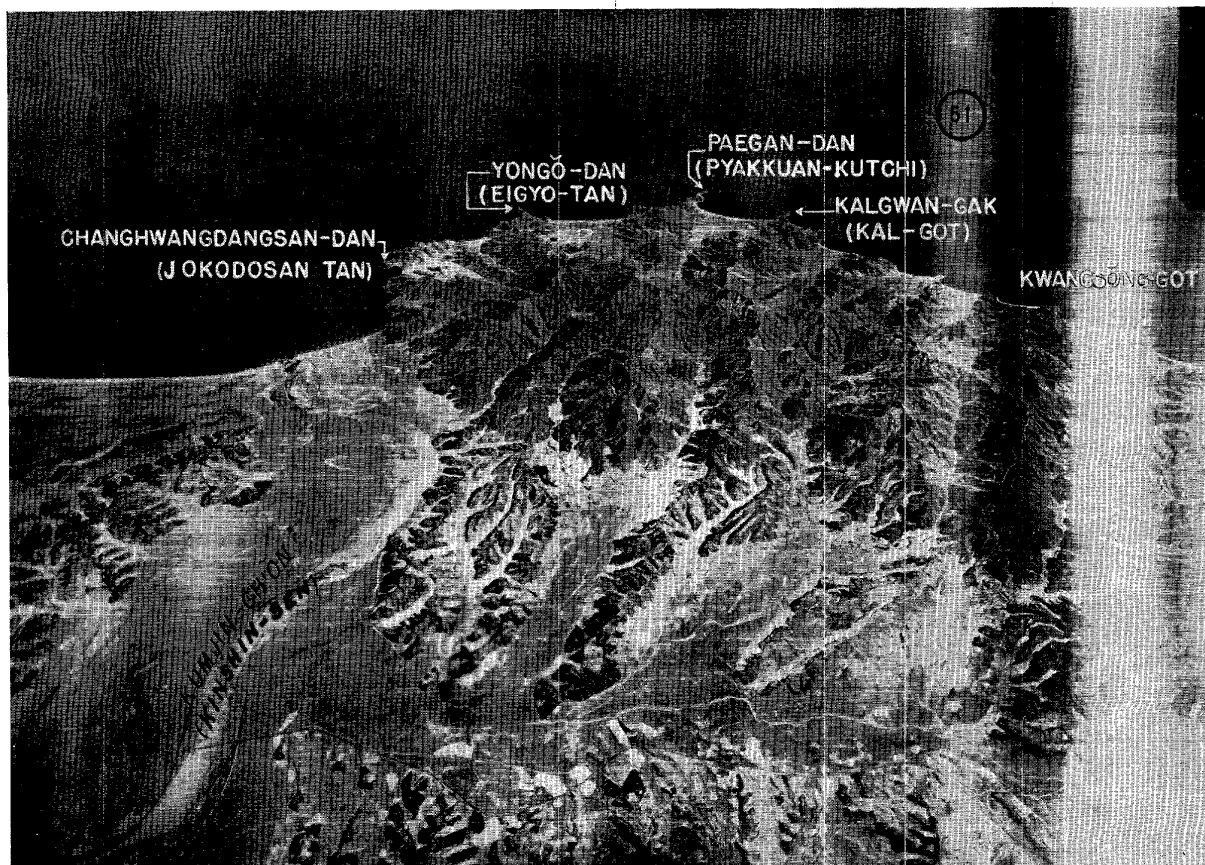


FIGURE IV - 22. East coast. Southern end of Hamhung-man (*Kankō-wan*), and coast to southward. Beach areas (50) and (51). Oblique aerial view, looking eastward. Note swampy river valley bridged by railroad, and low range of hills in left foreground. Approximate position of Yongo-dan (*Eigyo-tan*), $39^{\circ}38'N$, $127^{\circ}34'E$; U.S.H.O. charts 3248 and 5668. A.A.F. 468BG/4MR44, dated 21 December 1944.

neck joining Sojin-do (Sojin To) to the mainland, but only the southeastern part (FIGURE IV - 21) has normal beach characteristics, the northwestern part being backed by the small town of Sohojin (Seikoshin), which is served by two 110-foot jetties. The town has good road and rail connections with Hungnam and Hamhung.

Sojin-do is a wooded hill surmounted by a temple. Taejin-do (Tejin To), a wooded island, lies $\frac{1}{4}$ mile south of it in the approach to the northern of the 2 beaches just described. (FIGURES IV - 20 and IV - 21)

The main harbor of Hungnam (*Kōnan*) is entered west of Sojin-do. West of the harbor begins a beach 16.4 miles long which extends along the entire head of Hamhung-man (*Kan-kō-wan*); this beach is described in detail as beach area (50). The beach area terminates about $\frac{3}{4}$ mile eastward of the mouth of the Kumjin-ch'on (*Kinsbin-sen*), which flows into the south-

west corner of Hamhung-man (FIGURE IV - 22). Between this point and Changhwangdangsan-dan (Jokodosan Tan), the rocky south shore of the bay is indented by 2 coves, the eastern of which has a rock-free sand beach at its head (beach area (51)). The east side of this cove is formed by Changhwangdangsan-dan, a precipitous, reef-fringed promontory.

From Changhwangdangsan-dan $1\frac{3}{4}$ miles of rugged shore continue southeastward to Yongo-dan (*Eigyo-tan*), the termination of this subsector. A series of rocky, reef-fringed points alternates with small coves along this stretch. The two largest coves have sandy beaches at their heads (beach area (51)). Dwellings and a valley lie behind the northwestern beach, but the southeastern beach fronts a tiny pocket enclosed by hills. Steep hills rise close to the water behind most of this stretch.

(2) Landing beaches.

(a) General.

TABLE IV - 7
LANDING BEACHES OF COASTAL SUBSECTOR 41 G
Reliability GOOD. (PLANS 7 to 9)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(41) Vicinity of Ŭgansang-ni. (PLAN 7).	Generally clear.	0.9 mi.	75 to 100 ft.	1 on 20.	Surf heavy with S quadrant winds.	Firm sand.	Sandy strip 1,000 ft. wide covered with pines; flanked and backed by hills.	Highway and R.R. within 1 mi.
(42) Vicinity of Tongp'o-ri. (PLANS 7 and 8).	Partly obstructed.	1.5 mi., interrupted by streams.	75 to 100 ft.	1 on 20.	Surf heavy with S quadrant winds.	Firm sand.	Narrow sandy strip backed by rice-covered valley which narrows inland.	Highway and R.R. within 1 mi.
(43) Vicinity of Hongwon. (PLAN 8).	Obstructed; small islands to SW.	Pocket beaches; 0.1 to 0.9 mi.	50 to 75 ft.	1 on 15.	Surf moderate.	Sand and pebbles.	Low hills with many valleys; town of Hongwon closely backs S beach.	Highway and R.R. accessible.
(44) S of Hongwon. (PLANS 8 and 9).	Partly obstructed; islands to SE.	About 3 mi., interrupted by broad river mouth.	150 to 175 ft.	1 on 25.	Surf heavy, especially with SE winds.	Firm sand.	0.5 mi. wide sandy strip with low dunes; backed by river plain in N; hills in S.	Improved road and R.R. follow beach within 0.5 mi. to Hongwon at NE end.
(45) Vicinity of Songhung-ni. (PLAN 9).	Obstructed by islands off center and S.	4 mi., interrupted by stream.	150 to 175 ft.	1 on 30.	Surf moderate to heavy with SE winds.	Firm sand.	0.5 mi. wide sandy strip backed by hills.	Improved road and R.R. follow beach within 0.5 mi.
(46) Vicinity of Sin'gye-ri. (PLAN 9).	E beach clear; W beach obstructed.	2 beaches; E 2 mi., W 0.5 mi.	100 to 125 ft.	1 on 25.	Surf heavy; some protection on W end.	Firm sand.	Broad sandspit connecting hilly peninsula to mountainous coast.	Isolated except for trails.
(47) W of Tong-sang-ni. (PLAN 9; FIGURE IV - 18).	Approach obstructed by island.	0.8 mi.; several shorter beaches to S.	75 to 100 ft.	1 on 20.	Surf heavy.	Sand and pebbles.	Backed by hills; small cultivated valley runs inland from center of area.	Trail follows valley to R.R. and improved road 1 mi. inland.
(48) T'oejo-man. (PLAN 9; FIGURE IV - 18).	Clear, but approach constricted.	Several beaches; longest 0.6 mi.	75 to 100 ft.	1 on 25.	Surf light, except at bayhead with SE wind.	Firm sand.	Narrow bay flanked by high rocky hills; town of T'oejo at bayhead, backed by small lowland in rice.	R.R. adjoins all beaches; improved road close behind NE beaches.

TABLE IV - 7—Continued

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(49) Sangsong-ni to Sohojin. (PLAN 9; FIGURES IV - 18 to IV - 21).	Generally clear; obstructed at W end.	Several beaches; average 0.5 mi.	100 to 125 ft.	1 on 20.	Surf heavy; some protec- tion by Oeyangdo-tan (<i>Gaiyōdo-tan</i>).	Firm sand.	Narrow interrupted sandy strip backed by terraced and tree-covered slopes; small flat at Sodo-ri.	R.R. closely backs all beaches, improved road all except 3 easternmost.
(50) Head of Hamhung-man (<i>Kankō-wan</i>). (PLAN 9; FIGURES IV - 22 to IV - 27). (See also (b) below.)	Approach obstructed near center.	16.4 mi., in- terrupted by streams.	150 to 200 ft.	1 on 30.	Surf heavy.	Firm sand.	Broad river plain; hills in S; beach backed by lagoons, dunes, hills.	R.R. and highway at NE; elsewhere 4 to 7 mi. in- land; airfields and cities in this area.
(51) S of Hamhung-man (<i>Kankō-wan</i>). (PLAN 9; FIGURE IV - 22).	Partly obstructed.	Pocket beaches; 0.2 to 1.0 mi.	75 to 100 ft.	1 on 20.	Surf heavy; some protec- tion in deeper bays.	Firm sand.	Small flats narrowing in- land, backed and flanked by hills; flats chiefly in rice.	Isolated except for trails.

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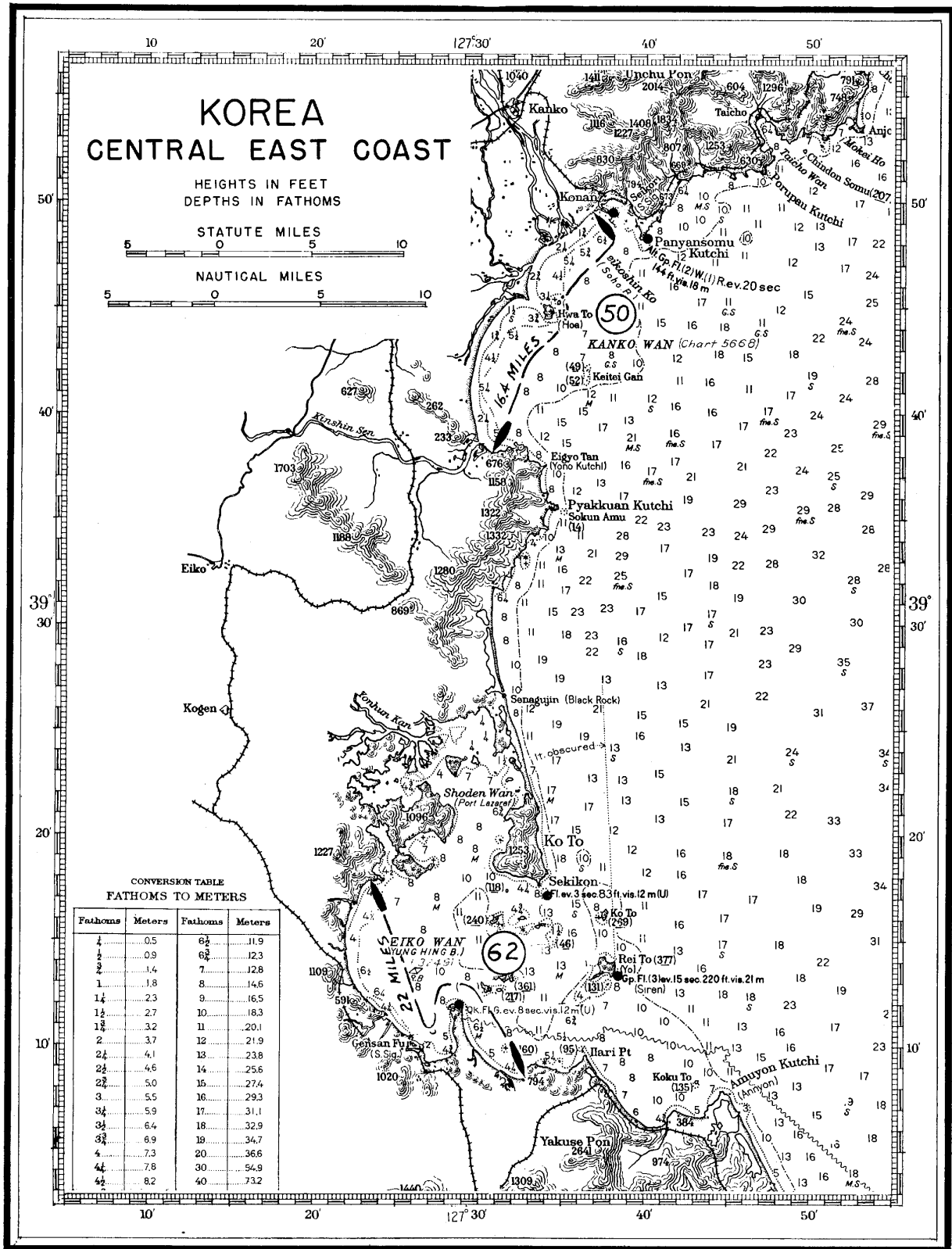


FIGURE IV - 23. East coast, Hamhung-man (Kankō-wan), and Yonghung-man (Eikō-wan). Beach areas (50) and (62).
Section from U.S.H.O. chart 3248.

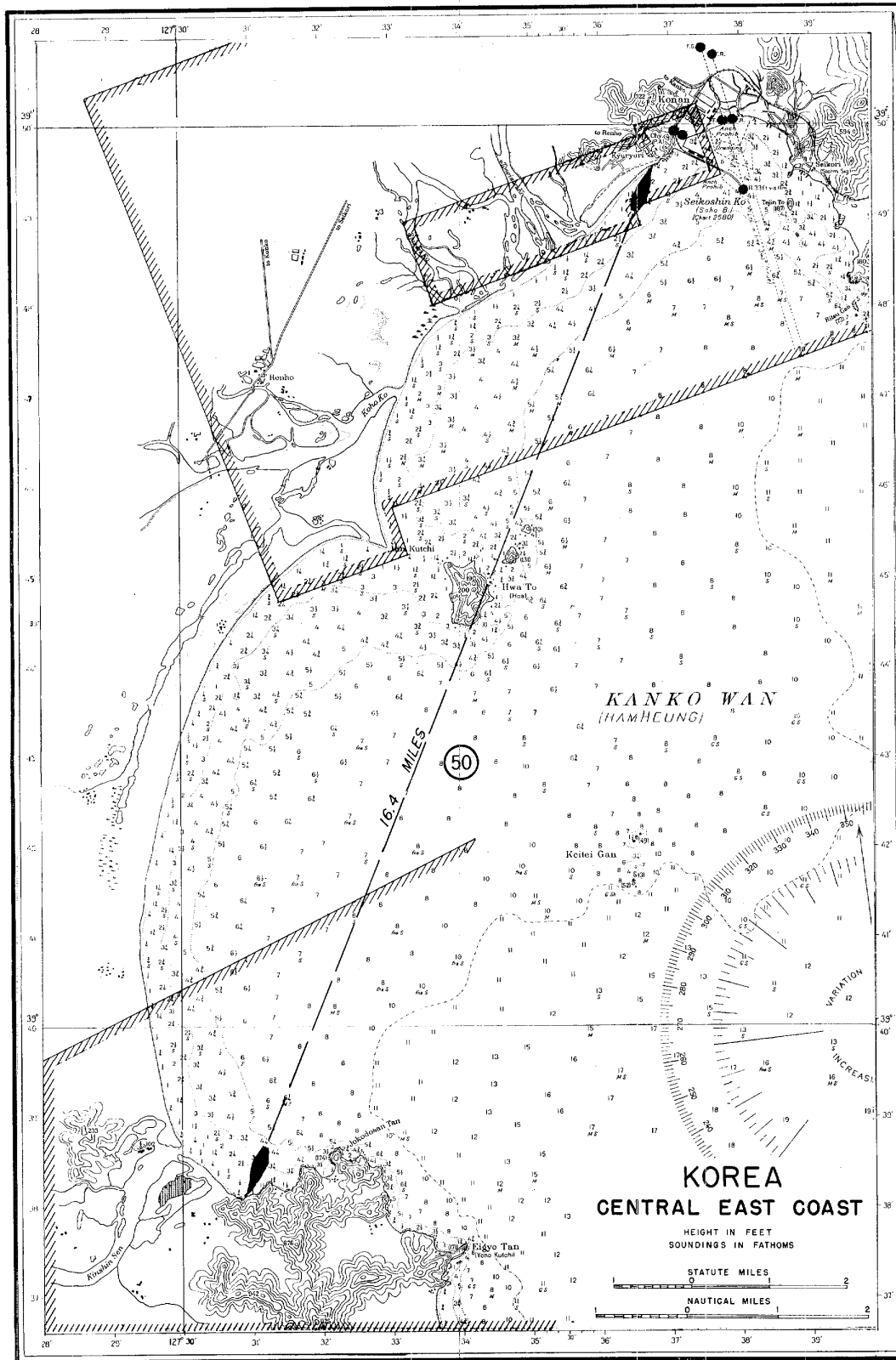


FIGURE IV - 24. East coast. Hamhungman (Kankō-wan). Beach area (50).
 Section from U.S.H.O. chart 5668. Shaded strips indicate areas covered by FIGURES IV - 22 (southern end of beach area), IV - 25 (northeastern part of beach area), and IV - 26 (enclosed rectangle within northeastern part).

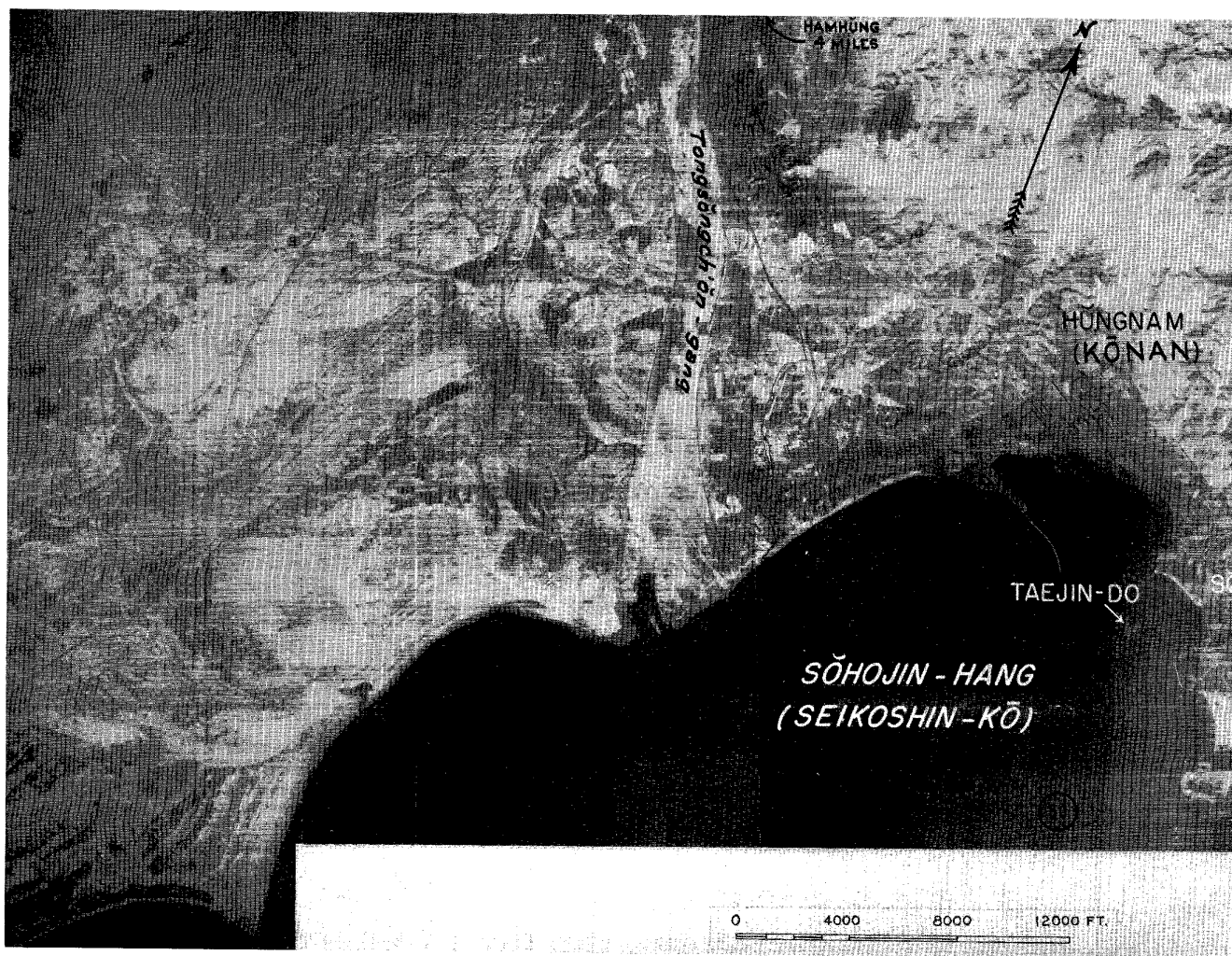
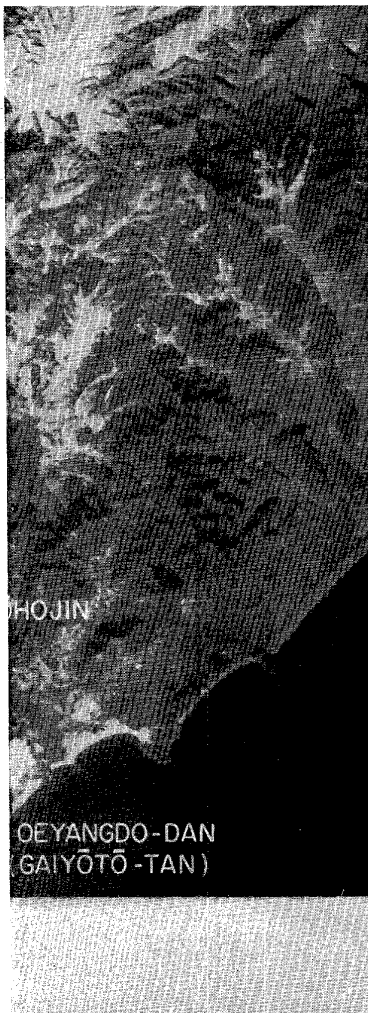


FIGURE IV - 25. *East coast*. Vicinity of Hungnam (Kōnan). Northeastern part of beach area (50). Note sand ridges backing beach southwest of city. U.S.H.O. charts 2580 and 5668. Area covered by this figure is indicated by shaded area in upper part of FIGURE IV - 24. A.A.F. 468BG/4MR44, dated 21 December 1944.



aded strip in



FIGURE IV - 26. *East coast. Hungnam (Kōnan)*. Northeast end of. Approximate position 39°49'N, 127°36'E. Area covered by this figure is enclosed by shaded strip on FIGURE IV - 25.



beach area (50).
RE IV - 24. A.A.F. 468BG/4MR44, dated 21 December 1944.

(b) *Hambung-man (Kankō-wan) beach area (50)*. Reliability GOOD. (PLAN 9).

1. LOCATION AND EXTENT. A much-interrupted sand beach extends for 16.4 miles in a gentle arc open to the south-east along the head of Hamhung-man (*Kankō-wan*) (FIGURES IV - 23 and IV - 24). The limits of the beach area are $39^{\circ}38'N$, $127^{\circ}31'E$, and $39^{\circ}49'N$, $127^{\circ}37'40''E$. This beach gives access to the port and industrially important city of Hungnam (*Kōnan*) (Chapters VI and VIII), to the city of Hamhung (*Kankō*) (Chapter VIII), and to the broad plain extending south-west and south of Hamhung, with its roads, railroads, towns, and air facilities. It is also a possible flanking beach for the important port and city of Wonsan (*Genzan*) to the south. The beach is not a first-class landing place because of its flat nearshore bottom slope and because of the difficulties of the terrain immediately inland, where swamps, lagoons, dunes, or multiple river mouths form an almost continuous barrier to vehicular movement inland. Important landmarks are the port of Hungnam at the northeast end of the beach; Hwa-do (*Ka-tō*), 200 feet high, $1\frac{1}{2}$ miles off the center of the beach; and a cylindrical white lighthouse on the tip of Oeyangdo-tan (*Gaiyōtō-tan*, Panyansomu Kutchi). There are 2 pocket beaches on the east side of Hwa-do, and the entire western shore of the island is sandy.

2. SEA APPROACH. The approach to the 30-foot depth is generally clear. It is obstructed only by a group of rocks, Hyongje-am (*Keiuei-gan*) $6\frac{1}{3}$ miles northeast of the southwest end of the beach. In general the 30-foot line lies 4,000 feet off the southwest end of the beach, and 5,000 feet off the northeast end, with a marked seaward swing off the central part, where the line loops outward to pass close around Hwa-do (*Ka-tō*) and several smaller islands and rocks, which are connected to the shore by a shoal 1 to $1\frac{1}{2}$ miles wide. The 18-foot depth line averages 2,000 feet off shore along the southwest part of the beach, 2,500 feet along the northeast part. This line too swings out around the shoal connecting Hwa-do to the shore. The bottom slope is everywhere flatter than 1 on 100, in many places flatter than 1 on 150. There are no nearshore dangers except the harbor works at Hungnam (*Kōnan*) (FIGURES IV - 25 and IV - 26), and the shoal connecting Hwa-do to the mainland at the center of the beach. It is possible that there are sandbars off the river mouths. The bottom material is sand, with a few patches of mud off the mouth of the river Kwangp'o-gang (*Kōho-kō*). In autumn, winter, and spring, the prevailing winds are west and southwest. In summer the winds blow alternately from the west, southwest, east, and northeast. Gales are rare, and not seasonal. Calms are infrequent. Fog may be expected 1 or 2 days per month. The tidal range is about 1 foot. Anchorage in the harbor of Hungnam, at the northeast end of the beach area, is described in Chapter VI. There is no sheltered anchorage directly fronting the beach. The 10-fathom line is from 3 to 7 miles off shore, and 10 miles out there is about 16 fathoms of water over a bottom of fine sand.

3. CHARACTER OF BEACH. Approximately 1 mile from the southwest end, the beach is interrupted by a large river, the Kumjin-ch'on (*Kinsbin-sen*). PLAN 9 and FIGURE IV - 24 do not agree on the width of the river mouth, which probably varies with the season and year. FIGURE IV - 22 gives the most recent information. From the Kumjin-ch'on the beach is continuous for 9 miles to the southernmost mouth of the exten-

sive lagoons near the center of the beach. From this point northeast the beach is interrupted at short intervals by streams, and near its northern end by a large river, the Tongsongch'on-gang (FIGURE IV - 27). The beach is of fine sand. The northeastern part is fairly soft, especially near the river mouths, and has muddy patches. The southwestern part is firm throughout. The width of the beach above high water increases gradually to the south, from 200 feet near Hungnam to 250 to 300 feet at the southwest end. The slope between low and high water is so gentle that in places even the 1-foot tide exposes several hundred feet of sandy flat at low water. The slope is flattest on the northeast part of the beach, and steepest at the southwest end, but even there the slope is probably not greater than 1 on 50. The beach is generally exposed, but is protected from north-quadrant winds by the headland opposite the northeast end, and from south-quadrant winds at the southwest end. Surf is moderate, and breaks in several lines over a wide belt. There is no predominant direction of shore drift. There are no buildings on the beach except at the northeastern end, which is closely backed by a western extension of the city of Hungnam, including large industrial establishments (FIGURES IV - 25 and IV - 26). Water can be obtained from the many streams, and sufficient quantities of drinking water can be obtained from shallow wells a few hundred feet inland.

4. ADJACENT TERRAIN AND EXITS. Low parallel sandy ridges back the entire beach in a strip $1\frac{1}{2}$ to 2 miles wide. Between the ridges are poorly drained longitudinal depressions. Some are occupied by lagoons, some by swamp, some by cultivated fields. (FIGURES IV - 22 and IV - 25) The ridges are sparsely covered with grass and evergreen trees in the south; they are barren in the north. The south half of this strip is fairly continuous, interrupted only by the swampy valley of the Kumjin-ch'on (*Kinsbin-sen*). The north half is cut into small segments by branching transverse river channels, as shown on FIGURE IV - 24. Behind the north half of the beach the plain extends inland beyond Hamhung; behind the south half of the beach the sandy strip is backed by a low range of hills, 100 to 200 feet high and 1 to 2 miles wide, which parallels the shore. These hills extend from the Kumjin-ch'on on the south to the large lagoons which extend westward from the center of the beach. The villages immediately behind the beach are connected only by trails, but an improved road runs north-northeastward from the town of P'ach'unjang, on the north bank of the Kumjin-ch'on 4 miles inland, gradually converging toward the shore until at Yonp'o, behind the north-central part of the beach, it is only $1\frac{1}{2}$ miles inland. Here it forks, one branch going northeast and then east to Hungnam, the other north to Hamhung. The railroad from Wonsan (*Genzan*) passes through P'ach'unjang, but recedes from the beach as it proceeds northward to Hamhung, and in places is as much as 7 miles inland. The primary highway from Wonsan to Hamhung keeps to the inland side of the railroad, and is about 7 miles from the beach throughout. The most direct access to Hamhung is from Hungnam at the northeast end of the beach area. The two cities are connected by a primary highway and 2 railroads. Airfields (Chapter XIV) are listed under the names of Kankō (Hamhung), Kankō West, and Kōnan (Hungnam). The latter is between the beach and the town of Yonp'o, not in the position shown on PLAN 9 about $2\frac{1}{2}$ miles farther north.

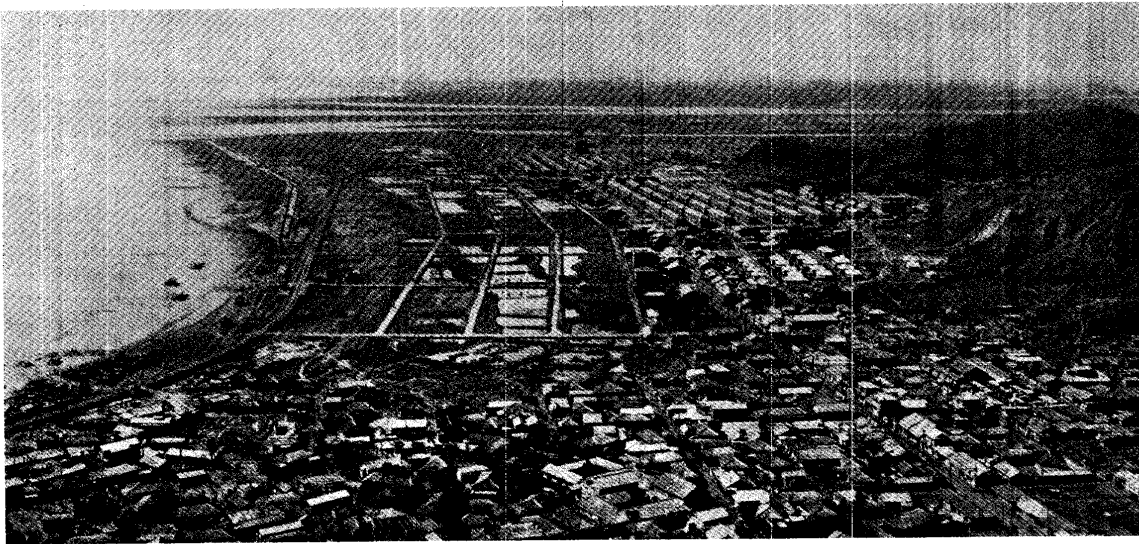


FIGURE IV - 27. East coast, Hungnam (*Kōnan*). Northeast end of beach area (50). View southwestward over western outskirts of city. Note very low beach slopes and multiple mouths of Tongsongch'on-gang (*Tojōsen-ho*, Toseisen Ko). Photograph undated, but prior to shoreward extension of industrial section; compare FIGURES IV - 25 and IV - 26. Approximate position 39°49'N, 127°37'E; U.S.H.O. charts 2580 and 5668.

H. Yongo-dan (*Eigyo-tan*) to P'ae-ch'on.

(39°37'N, 127°34'E; 39°02'N, 127°49'E)

(PLAN 9; FIGURE IV - 28; U.S.H.O. charts 3248 and 3249)

(1) Coast.

The approaches to this coastal subsector are clear, except at Yonghung-man (*Eikō-wan*), which has several islands in its entrance and inside the bay. There are a few shoals close to the shore at other places. The 10-fathom curve varies from about 400 yards to 5 miles off shore; the 100-fathom line ranges between approximately 17½ and 31 miles. The bottom sediment is composed of sand and mud, but in Yonghung-man it is predominantly mud.

This subsector is distinguished by the deep indentations of Yonghung-man (*Eikō-wan*) and Songjon-man (*Shōden-wan*). Long sandy beaches border most of the sea and bay shores, but there are several rugged cliffy stretches.

The inland terrain on this narrow portion of Korea is consistently mountainous, although not as high as to northward. Narrow stream valleys cut through the mountains and broaden near the sea. Several heights of over 1,000 feet rise within 2 miles of the water along this whole stretch, and behind the southern end a 4,144-foot mountain rises only 7 miles inland.

Vegetation on the coastal hills consists of scrub pine and other coniferous trees, and large areas of grassland. There is also a scattered growth of broadleaf trees. In the broader river valleys there are rice paddies and wild reeds.

1

A 7-mile stretch of rugged, irregular shore follows southward from high, wooded Yongo-dan (*Eigyo-tan*) (FIGURE IV - 22; U.S.H.O. chart 3248). Spurs of hills from a mountain-chain paralleling the coast about 2 miles inland terminate at the shore in steep, rocky points between which lie coves with sandy beaches at their heads (beach area (51), TABLE IV - 7). A trail parallels the coast, traversing the shoreside villages.

The most salient of the headlands is Paegan-dan (Pyakkuan Kutchi), about 2 miles southward of Yongo-dan (*Eigyo-tan*). Between these points is a bight flanked by small coves from which it is separated by steep, rocky points. The head of the bight is bordered by a sandy beach, behind which spreads the valley of a stream whose outlet cuts the beach about midway. Conifers grow close behind the beach and rice paddies cover the valley, which is surrounded by high hills and contains 3 villages. A rock lies off the tip of the southern entrance point of this bight.

A hilly point, forested with conifers, forms the south shore of the southern cove, terminating in two points, the southern of which is Paegan-dan (Pyakkuan Kutchi). Detached rocks lie close off each point and an island rock lies about ¼ mile to seaward of Paegan-dan.

The next bight southward is the deepest indentation in this 7-mile stretch. Its north shore is steep and irregular. A sandy beach edges the entire head of the bight; it is broken about midway by the mouth of a stream, and backed by a valley where rice is under cultivation. A hilly point terminating in a round, high headland, Kalgwan-gak (Kal-got), forms the steep south shore of this bight.

Another promontory, with a long, narrow island close off its extremity, juts into the sea about 2 miles southwest of Kalgwan-gak (Kal-got). Between them are 3 small coves, the first steep-shored, and the second having a beach at its head. A village lies behind the north shore of this central cove, and a stream empties into the cove near the south end of the beach, which is backed by a valley where rice is grown. The valley runs inland almost a mile between high hills, and is occupied, inland, by the village of P'idong-ni. The third cove has a beach at its head, backed by a very small valley. Slightly over a mile inland from this point is a 1,332-foot mountain summit.

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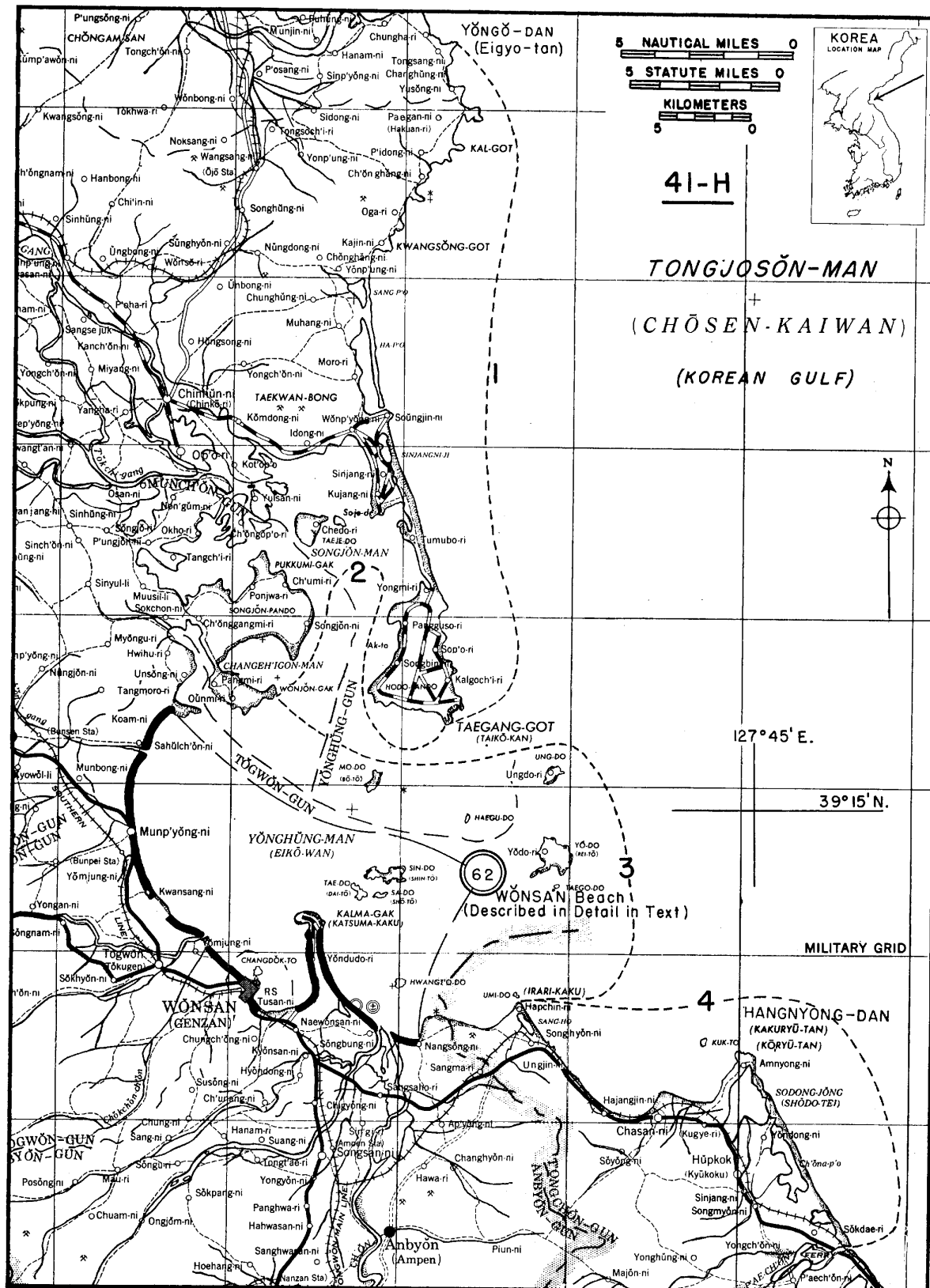


FIGURE IV - 28. Coastal subsector 41 H.
Beach areas are shown on PLAN 9.

Four coves, only slightly indented, make up the last 2 miles of this rugged stretch, which terminates at Kwangsong-got, a grassy triangular point. The 2 northernmost coves are separated by a small hilly point; each has a beach across its head and a village inland from the beach. Two stream mouths cut the beach of the second cove, and a small valley runs inland. Beside the south stream mouth hills rise abruptly, continuing high above the water's edge southward to the end of a promontory, off which lies a detached rock. The south side of this promontory is the north shore of the third cove in this stretch, which is small and steep-shored except for a narrow beach at the north end of its head. A small high point separates this cove from the last one, which is wider, with a beach bordering its head, broken about midway by a stream mouth.

Near Kwangsong-got begins an 11-mile stretch of beach (beach area (52), TABLE IV - 8), uninterrupted except by the mouth of a lagoon 5 miles southward. Behind the first mile of beach lies a valley surrounded by high hills on the north and west. A spur of hills from the southwest extends toward the shore, but ends at the north side of a lagoon which stretches southward almost a mile, some 300 yards behind the beach (U.S.H.O. chart 3249). A second lagoon, enclosed by a long sand spit, begins $\frac{1}{4}$ mile southward at about the same distance behind the shore. Just inland of this spot another spur of hills extends eastward, terminating beside the north end of the second lagoon, which runs southward some 3 miles. West of the lagoon lies a valley dotted with villages and cultivated in rice. South of this valley a spur of hills runs eastward, terminating about $\frac{1}{4}$ mile behind the beach and bordering the south end of the lagoon. On the south side of the lagoon mouth is the village of Soungjin-ni behind a low point of land which has rocks lying close off shore. Secondary highways run westward and southward from Soungjin-ni.

The beach continues southward about $5\frac{1}{2}$ miles along the slender peninsula which encloses Songjon-man (*Shōden-uan*). A half-mile south of Soungjin-ni, and some 500 yards back of the beach, is a third lagoon. At this point, 1 mile inland, lies the northern shore of Songjon-man. The lagoon drains into Songjon-man through a stream paralleling the seashore about 600 yards inland. The mouth of the stream is crossed by a bridge, which joins the beach with a hilly area, the south and west sides of which border Songjon-man. Good roads cross this area, joining several villages.

The remainder of the beach to southward borders an uninhabited sandy isthmus separating Songjon-man from the sea. The beach narrows $\frac{1}{2}$ mile from its southern end where a small lagoon, draining into Songjon-man, parallels the shore. A village lies south of this lagoon, near the lower slopes of hills that rise to the south and west.

These hills mark the north end of Hodo-pando (*Kotō-hantō*), the southern portion of the peninsula, roughly triangular in shape and surmounted by hills which attain mountain altitudes across the southern end of the peninsula. The east side is a rugged 4-mile stretch which begins at the north with a series of rocky points rising to steep hills, with detached rocks off shore. Three other similar stretches alternate with 3 low, sandy areas (beach area (53)). The first sandy stretch of about $\frac{1}{4}$ mile is backed by a small valley encircled by steep hills. The second beach, over twice as long, is backed by a similar valley encircled by high hills. A cliffy stretch of shore project-

ing to 2 sharp promontories separates this beach from the third sandy stretch, slightly smaller than the previous one and backed by a valley containing a village. The valley is encircled by hills which rise rapidly on the west to sharp peaks, one attaining a height of 1,253 feet. The beach terminates at a cliff-lined shore running irregularly to a promontory some 500 yards south-eastward, which has off-lying rocks.

Another $\frac{3}{8}$ mile of cliffy, dentilated shore leads to Taegang-got (*Taikō-kan*, Nan Kaku), the southern extremity of a cliffy headland which terminates this subdivision.

2

Taegang-got (*Taikō-kan*, Nan Kaku) is the northeastern entrance point of Yonghung-man (*Eikō-uan*). A number of hilly islands lie in the entrance to this bay and in its outer part, ranging in length up to 1 mile and in height up to 400 feet (FIGURE IV - 29). Yo-do (*Rei-tō*), the largest and loftiest island, has sandy beaches on its western and southern shores (beach area (54)). West of Yo-do is a group of 3 islands (FIGURES IV - 31 and IV - 39), with several pocket beaches on their shores (beach area (55)).

The south side of Hodo-pando (*Kotō-hantō*), from Taegang-got westward to Namso-gak (Nansei Kaku), consists of about 2 miles of rocky shore backed by steep slopes. Namso-gak, a rocky headland separating 2 sandy stretches, is the southeastern entrance point of Songjon-man (*Shōden-uan*). North of it a beach (beach area (53)) curves around a broad, low headland, then continues around 2 coves, terminating at a short rocky stretch. Ak-to (Fu To), an islet, lies $\frac{1}{2}$ mile off the second cove. The rocky stretch leads to the head of a third cove which is bordered by a beach, behind the north end of which is a village. Gradually sloping hills back this whole stretch, and coniferous trees grow near the shore.

A hilly headland forms the north shore of the last-mentioned cove. It juts into 3 points, the middle one extending southwestward with a shoal off shore. From the third point, Pang-mong-mal (Hoboku Matsu), a sandy shore, interrupted by a small point, extends $\frac{1}{2}$ mile northeastward to the western entrance point of a bight. This bight, $\frac{3}{8}$ mile across its entrance, is bordered by 4 short beaches (beach area (53)) separated by small rocky points. Beyond the bight another short rocky stretch leads to the mouth of a lagoon, on the north side of which is the beginning of some $2\frac{1}{2}$ miles of beach (beach area (56)). This beach is broken about midway by a narrow, sandy-necked peninsula terminating northwestward in a hill-topped promontory. The entire beach is the western side of the narrow, sandy isthmus described in subdivision 1. Two islands and several shoals lie in the bay off the southern half of this sandy stretch; another island lies close off the northern half, which terminates at the mouth of a south-flowing stream with a bridge across it.

Here the shore turns westward at a sharp angle and runs one mile in a series of alternating beaches and rocky points (beach area (56)) to a narrow headland, scalloped on its southeast side with several small points. From its westernmost point the headland gives way to a low shore which runs in an irregular arc almost $2\frac{1}{2}$ miles northward to the head of Songjon-man. Low hills back the southern and central portions of this shore, which parallels the low seashore lying 1 mile east. Several villages connected by good roads occupy the area between.

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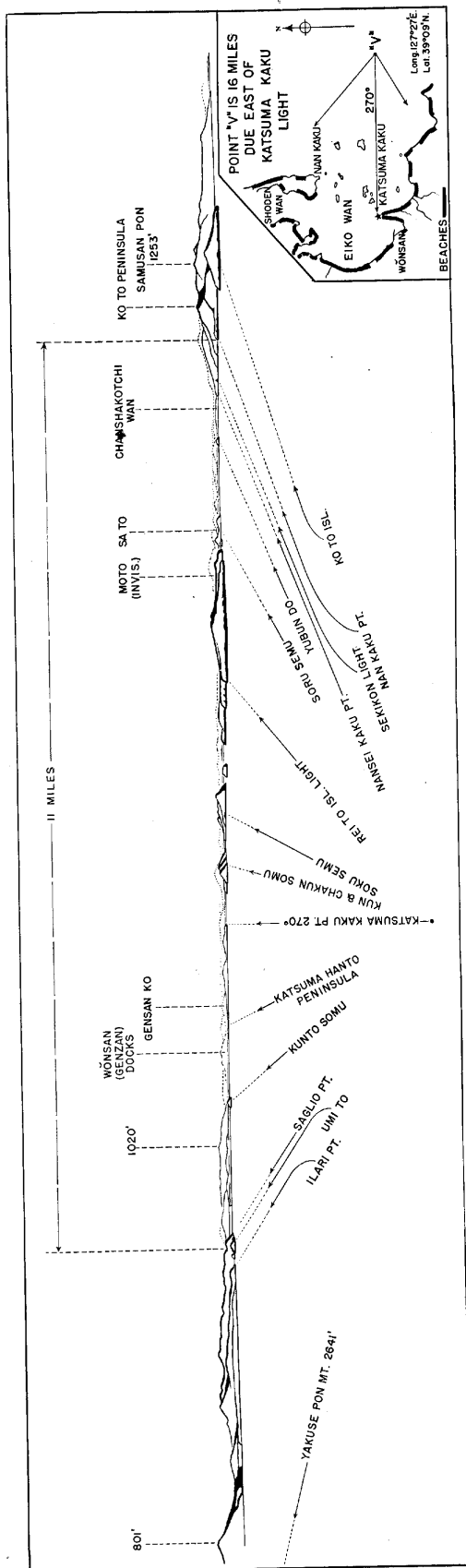


FIGURE IV - 29. East coast, Yonghung-man (Eikō-uan). Beach areas (53) to (65).
Panoramic coastal sketch. Approximate position of Kalma-gak (Katsuma-kaku), 39°12'N, 127°29'E. Names, other than Wonsan (Gwan'gwan), are from U.S.H.O. chart 3249.

The north shore of Songjon-man (beach area (57)) extends westward over 2 miles in a series of low, sandy points and coves backed by low hills to an inlet. A low, narrow island lies in the center of the inlet near its entrance, and a smaller island lies close south of this one.

North and west of this inlet there is a broad deltaic plain crossed by many rivers and streams. The 2 main rivers, the Yanghung-gang and the Tokchi-gang, join to form a single broad river mouth which reaches the northwest end of Songjon-man about $\frac{3}{4}$ mile southwest of the inlet. Off the river mouth lies a group of 6 low islands fringed with several smaller ones among tidal flats of mud and sand, some of which dry. These low islands are separated by shallow channels radiating from the river mouth. Mountains surround the river plain, and low hills rise between the rivers. There is extensive cultivation in the low areas, and there are also patches of reeds. On the hills are growths of coniferous trees and scrub pine among areas of wild grass.

About 2 miles upstream from the river mouth a large lagoon opens southwestward from the Tokchi-gang. Its shores are very irregular, and an islet lies near its west bank opposite the mouth of a stream. Near its southwest end is an area of swampland, and low hills rise to eastward.

The deltaic islands lying off the mouth of the rivers form part of the north side of a shallow bay called So-man (Sei-wan). Drying sand and mud flats obstruct most of the entrance of this bay. The extremely irregular shores are backed by hills. Many points and coves edge the shores and a peninsula with a chain of low hills on it extends southeastward from the head of the bay. The extremity of the peninsula is bordered with sandy beaches and there are beaches at the head of coves and bordering several points along its south side (beach area (59)). A village lies behind the beach at the tip of the peninsula and another faces the head of a cove, at the foot of hills, on the south side. The cove on the south side of the peninsula has a steep, irregular south shore backed closely by hills.

The south shore of So-man (Sei-wan) consists of 2 irregular inlets and a broad headland which separates them. Sandy stretches (beach area (60)) border some of the numerous small coves within the 2 main inlets, and a few villages lie behind the shore, backed by hills. The eastern inlet and the two promontories which flank it form the north side of Myonghyo-pando (Myonho Hanto; Songjon-pando on PLAN 9), a large peninsula with a backbone of mountains rising to 1,096 feet. The eastern inlet has 2 good sandy stretches, the longer one bordering its east shore at the base of a hill-crowned cape. This point juts northward from Myonghyo-pando (Songjon-pando), terminating in two rocky points about $\frac{1}{2}$ mile apart with a beach between them. The northeastern point is Pukkumi-gak (Hokukyumi Kaku), which is the southern entrance point of So-man (Sei-wan). Two small islands lie in So-man near its center, and a 5-fathom channel leads into the bay close off Pukkumi-gak.

About a mile off Pukkumi-gak, northeastward, is the hilly island, Taejo-do (Tantor Somu), edged almost entirely with beaches (beach area (58)), and with a village near its east shore. A sand spit extends from its northeast side toward a smaller, hilly island which also is surrounded by beaches, narrower than those on Taejo-do. Shallow water lies between these islands and in most of the north part of Songjon-man.

The northeast coast of Myonghyo-pando comprises about 2 miles, extending between Pukkumi-gak (Hokukyumi Kaku) and Songjon-gak (Shoden Kaku). At the northwestern end is over 1/4 mile of shore, part of it sandy, part steep and rocky, leading to a shallow bight with low, sandy shores backed by a village near the south end of the bayhead (beach area (60)). A low, hilly headland separates this bight from a similar one southeastward whose southeastern entrance point is rocky, rising to hills but flanked by beaches. A beach circles the blunt headland of Songjon-gak (Shoden Kaku), which is backed steeply by hills.

A stretch of beach (beach area (60)) extends from Songjon-gak to the rocky shore near Yonbango (Eihogo), the northern entrance point of Changjahwa-man (Chanshakotchi Wan; Change'igon-man on PLAN 9). High hills back the entire stretch, receding midway to leave an area of lowland behind the center of the beach where a village lies.

Changjahwa-man, which terminates this subdivision, lies between Myonghyo-pando (Songjon-pando) and a claw-like peninsula extending off its south side. Its shores consist mainly of sandy beaches (beach area (60)). Detached rocks lie close off Yonbango, the northern entrance point of the bay, which is high and rocky. From here a straight shore runs northwest 3/4 mile, and consists of a sandy beach backed by hills, with only a few rocky interruptions. Rocks lie close off the northern half of this stretch, and farther to the west off the long sandy stretch bordering the north bay shore are other rocky patches close to two points of land. A spur of hills runs south toward the water behind the eastern of these two points. The rest of the shore is backed by lowland where the hills recede. Dwellings lie behind the beach at two places.

The narrow head of Changjahwa-man (Chanshakotchi Wan) comprises 3 coves, bordered with low sandy shores and separated by rocky points. The head of the middle cove is the east side of a low, narrow isthmus, the neck of the peninsula which forms the south shore of Changjahwa-man. Hills rise from the north end of the isthmus and also near its southern end, from which point they continue east and southeast, backing the south shore of Changjahwa-man. The south shore is rocky and steep near the bayhead, then becomes a sandy beach, which continues all the way to the southern entrance point of the bay, Wonjon-gak (Pemoku Kutchi), the termination of a low sandy point of land, off which lie detached rocks.

3

The south shore of the peninsula which terminates eastward at Wonjon-gak is scalloped with small sandy-edged coves, separated by rocky or sandy points (beach area (60)). Some of these coves are backed by hills and some by lowland running inland to hills. This shore terminates westward at the entrance of a narrow bay, Hamgumi-man (*Kankōbi-wan*, Hamukumi Wan), which extends over 2 miles northward between sandy, dented shores backed by hills (beach area (61)). The low isthmus mentioned in the preceding subdivision, which connects the large peninsula of Myonghyo-pando (Songjon-pando) with the smaller one south of it, is part of the east shore of Hamgumi-man, facing the head of the cove. North of this lies shallow water. The hills which back the east and west shores recede from the sandy head of the bay, particularly on the northwest side where a stream empties into the bayhead near

detached rocks, and marshes line the shore, which is backed by a valley to northwestward. The west shore of the bay rises from low beach to high hills which recede behind a cove at the southern end. A narrow, hilly peninsula terminates the west shore of Hamgumi-man.

At the base of this hilly peninsula, on its south side, begins a long stretch of beach which is described in detail as beach area (62). This beach continues along the entire head of Yonghung-man (*Eikō-wan*) as far as the port and city of Wonsan (*Genzan*) (Chapter VI and VIII). It is resumed along the shores of Kalma-pando (*Katsuma-hantō*), the peninsula bounding the harbor on the east, and ends against the rocky southeast shore of the bight fronting the east side of the peninsula. The remainder of subdivision 3, eastward to *Irari-kaku* (Ilari Point), consists of a gently curving bight along whose shore are several narrow sandy beaches separated by rocky points (beach area (63)). Steep hills back this stretch, but the longest beach, at the head of the bight, has a small lowland pocket behind it, with a settlement on either flank.

4

Irari-kaku (Ilari Point), with a 95-foot-high islet close off shore, is the southern entrance point of Yonghung-man (*Eikō-wan*) and the northwestern entrance point of an open bight. Three stretches of sandy beach edge the shore of the bight, alternating with three rocky stretches.

From hilly *Irari-kaku* the first beach (beach area (64)) extends 1 mile to the mouth of a lagoon 1/2 mile long which backs the southern half of the beach. Inland behind the lagoon is a stream valley where the railroad approaches the shore. South of the lagoon mouth is about a mile of irregular shore rising steeply to hills. Small rocky stretches alternating with short sandy areas edge the water, close to which the railroad and a primary highway run at the base of the hills.

A 2 1/4-mile stretch of broad beach follows (beach area (65)), and along it near the water run the railroad and highway. Two villages lie back of the beach and high hills rise gradually behind the whole stretch, attaining a 2,641-foot summit a little over 2 miles inland. The beach terminates at a steep, rocky stretch of shore 3/4 mile long which, in turn, is succeeded by another stretch of beach almost the same length. This beach is cut by the mouth of a north-flowing stream, and a village lies near the stream mouth.

Crossing the stream, the railroad runs eastward, leaving the coast which extends northeastward to a blunt, hill-crowned promontory dividing the open bayhead into two bights. The eastern bight has a broad 1 1/2-mile beach (beach area (66)) fronting its southwestern side; its eastern half is fronted by the same length of irregular, rocky shore backed by low hills. Behind these hills, about 1/2 mile from the shore, is the northern part of a lagoon. Vegetation along this shore consists of wild grass and a few conifers. Hangnyong-dan (*Kakuryū-tan*, Amuyon Kutchi), a hilly promontory, terminates this rugged stretch and is the eastern entrance point of the 8-mile bight. Kuk-to (Koku To), a cliffy islet 135 feet high, lies 1 1/4 miles west-northwestward of the point.

From Hangnyong-dan an almost straight sandy shore (beach area (67)) extends south-southeastward to the mouth of the Pae-ch'on which terminates this subsector.

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Three lagoons back most of this sandy stretch. The northernmost lagoon, Sodongjong (*Shōdo-tei*, Shodon Chon), begins less than 1/2 mile south of Hangnyong-dan and parallels the shore irregularly for about 1 1/2 miles. Low hills rise along the lagoon shore behind the sea beach but terminate at a point where a cove on the lagoon extends to within 180 yards of the sea. Just north of this on the ocean side, a broad rocky point interrupts the beach and behind the point is a village.

A winding stream connects the first lagoon with the second one, the north end of which is 1/4 mile southward (U.S.H.O. chart 3248). Vegetation on the beach east of this lagoon is wild grass and a little scrub pine, but west of the lagoon, areas

of rice are under cultivation between low hills where a few conifers grow. These hills extend around the south end of the lagoon and approach to within a few hundred yards of the shore. They also extend southward to the third and smallest lagoon. A village lies behind the beach just north of this lagoon, near where a rock lies off shore.

Between the last lagoon and the P'ae-ch'on, rice is cultivated in the alluvial valley that extends inland behind the beach. Some of the streams in this valley run between diked embankments.

(2) Landing beaches.

(a) General.

TABLE IV - 8

LANDING BEACHES OF COASTAL SUBSECTOR 41 H
Reliability GOOD. (PLANS 9 and 10)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(52) S of Kwang-song-got. (PLAN 9).	Clear.	11.9 mi., interrupted by lagoon mouth.	150 to 200 ft.	1 on 30.	Surf heavy.	Firm sand.	Beach fronts sandspit with dunes in wider part; backed by lagoon and hills, and in S by bay.	Improved road at center; trails at N.
(53) Hodo-pando. (<i>Koto-bantō</i>) (peninsula). (PLAN 9).	Generally clear.	Several beaches; up to 2.5 mi.	75 to 100 ft.	1 on 25.	Surf heavy on E; light on W.	Sand; firmer on E.	Mountainous peninsula; land slopes rapidly up from beaches.	Improved roads skirt shore; channeled exit to N.
(54) Yo-do (<i>Rei-tō</i>). (PLAN 9).	E beach obstructed; W clear.	2 beaches; 0.4 mi.	75 to 100 ft.	1 on 20.	Surf moderate; heavier on E beach.	Firm sand.	Rises to 400-ft. peak in center of wooded island.	Trails.
(55) Tae-do, Sindo, and Sa-do. (PLAN 9).	Partly obstructed.	Several small beaches; average 0.1 mi.	25 to 50 ft.	1 on 10.	Surf moderate.	Sand and pebbles.	Small hilly islands; steep slopes.	Isolated.
(56) Songjon-man; central E shore. (PLAN 9).	Obstructed; approach channeled.	5.5 mi., interrupted by 2 rocky points.	100 to 150 ft.	1 on 30.	Surf light.	Sand; probably locally soft.	Narrow sandspit in S; hill in N.	Exit channeled; road backs beach.
(57) Songjon-man; N shore. (PLAN 9).	Obstructed; islands and shoals.	2.6 mi.	50 to 75 ft.	1 on 30.	Surf generally light.	Sand and mud.	Steep slopes.	Improved road backs beach.
(58) Taejo-do and Sojo-do. (PLAN 9).	Partly obstructed; approach channeled.	Beaches continuous around islands; total 3.5 mi.	50 to 75 ft.	1 on 25.	Surf light.	Firm sand.	Hill slopes.	Isolated.
(59) Yanghung-gang delta. (PLAN 9).	Obstructed.	W beach 2 mi.; E beach 0.3 mi.	25 to 50 ft.	1 on 30.	Surf absent.	Sand and mud.	Hills and swamps of river mouth.	E beach isolated; trails accessible from W Beach.
(60) Myonghyo-pando (Songjon-pando) (peninsula). (PLAN 9).	Obstructed except on E shore.	19 mi., interrupted by many rocky points.	50 to 75 ft.	1 on 30.	Surf light except on SE.	Sand; S and E firm; N and W soft.	Backed by high barren hills of peninsula; small isolated flats on S and E shores.	Trails only.
(61) Hamgumi-man (Hamukumi Wan); W shore. (PLAN 9).	Partly obstructed; approach channeled.	2 beaches; 0.7 and 1 mi.	50 to 75 ft.	1 on 25.	Surf absent except with SE winds.	Sand.	Narrow sand strip backed by high steep hills.	Trails over steep hills.

TABLE IV - 8 *Continued*

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(62) Vicinity of Wonsan (PLAN 9; FIGS. IV - 24 and IV - 29 to IV - 41) (See also (b) below.)	Generally clear; approach channeled.	22 mi.	100 to 150 ft.	1 on 30.	Surf light except with E winds.	Firm sand.	Alternating river flats and hills; flats narrow rapidly inland.	R.R. and highway accessible.
(63) W of <i>Irari-kaku</i> . (PLAN 9).	Partly obstructed.	2.9 mi., interrupted by rocky points.	75 to 100 ft.	1 on 25.	Surf heavy with NE quadrant winds.	Firm sand.	Narrow sandy strip rising to steep hills.	R.R. accessible by trail from E end of beach.
(64) SE of <i>Irari-kaku</i> . (PLAN 9).	Partly obstructed.	2 mi.	100 to 125 ft.	1 on 25.	Surf heavy with NE quadrant winds.	Firm sand.	Backed on NW by lagoon and swamps; on SE by steep hill slopes.	R.R. and highway easily accessible from SE end.
(65) W of Chasan-ni. (PLAN 9).	Clear.	2.8 mi., interrupted by rocky shore.	125 to 150 ft.	1 on 30.	Surf heavy with NE quadrant winds.	Firm sand.	Narrow sand strip rising to high mountains, which extend to sea at ends of beach.	R.R. and highway skirt beach.
(66) NE of Chasan-ni. (PLAN 9).	Clear; islands off E end.	1.7 mi., interrupted by small streams.	125 to 150 ft.	1 on 30.	Surf heavy with NE quadrant winds.	Firm sand.	Small river plain backed by hills.	R.R. and highway accessible.
(67) SE of Hangnyong-dan (<i>Kakuryū-tan</i>) (PLANS 9 and 10).	Clear on N; rocks and shoals on S.	10.7 mi.	75 to 100 ft.	1 on 25.	Surf heavy.	Firm sand.	Almost continuous lagoons, separated by narrow necks; terrain inland of lagoons hilly.	R.R. and highway skirt shore on S; cut inland to N.

(b) Wonsan (*Genzan*) beach area (62). Reliability GOOD. (PLAN 9)

1. LOCATION AND EXTENT. The southwest shore of Yonghung-man (*Eikō-wan*) is lined with 22 miles of almost continuous sand beach. The limits of the beach area are 39°08' N, 127°33'E; 39°18'N, 127°24'E. The beach gives access to the important port and city of Wonsan (*Genzan*) (Chapters VI and VIII), which interrupts the beach near its center; to the coastal railroad and highway; and to air facilities in the area. The beach is a suitable landing place throughout most of its length, but the approach is channeled by a number of islands at the entrance to Yonghung-man (FIGURES IV - 24, IV - 29, and IV - 30). Also, communication between various parts of the beach is interrupted by rivers, streams and ridges. Important landmarks for near approach are a white lighthouse on the end of Kalma-gak (*Katsuma-kaku*), and an oil reservoir and village at the westernmost point of the bay at Mun'pyong-ni. (Note: no relief is shown on the part of PLAN 9 covering the beach area.)

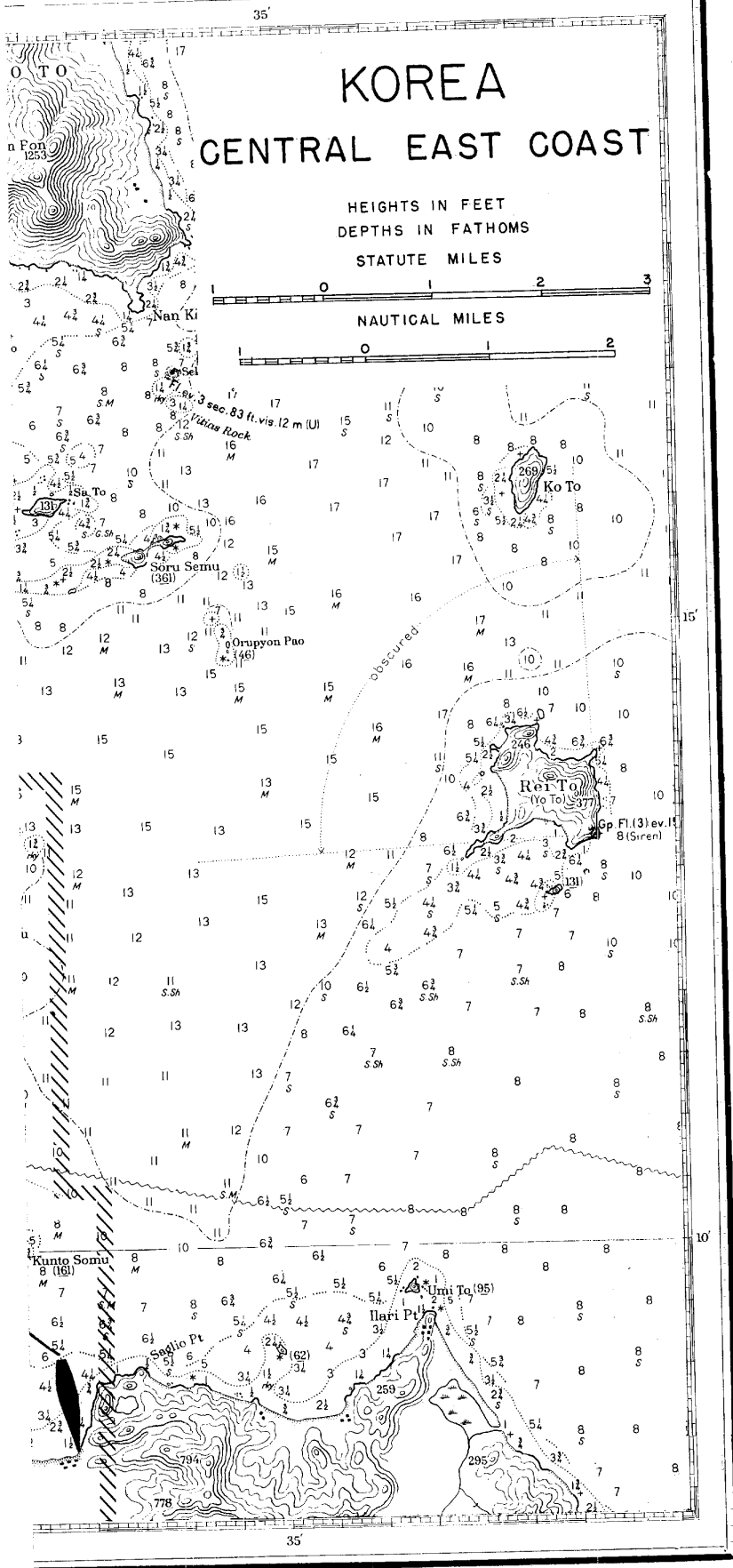
2. SEA APPROACH. (FIGURE IV - 30) The approach to the 30-foot depth is channeled by the numerous islands in the mouth of Yonghung-man (*Eikō-wan*). The 30-foot line is 4,500 feet off shore at the southeast end of the beach. From there it swings in to 1,800 feet along the seaward side of Kalma-pando (*Katsuma-bantō*). Its course is irregular within Wonsan-hang (*Genzan-kō*). North of the harbor the line parallels the shore at a distance of 2,500 feet to a point 2.5 miles from the north end of the beach, where it swings abruptly out to approximately 4,500 feet, continuing at that distance to the end of the beach. Along this same 2½ mile stretch, the

18-foot depth is 1,200 feet off shore, and shows a comparable landward swing to the south, paralleling the shore at a distance of 600 feet all the way south to Wonsan-hang. On the harbor side of Kalma-pando, the 18-foot line is irregular. On the seaward side the line parallels the shore at 600 to 700 feet, gradually swinging out to 1,200 feet at the southeast end of the beach area. The only nearshore dangers are rocks in the northernmost ½ mile of beach; a rock 2½ miles northwest along the shore from the northernmost harbor works at Wonsan; the harbor works at Wonsan; and rocks on the tip of Kalma-pando. The bottom slope is approximately 1 on 35 for most of the beach area; it flattens to 1 on 60 at the southeast end of the beach area and at the extreme north end; in the harbor area it is irregular. The bottom is chiefly sand and mud, and affords good holding ground. From May through July, fogs occur on an average of 2 days a month. January, September, and October have the least fog; in these months it occurs on an average of once in 10 years. In autumn, winter, and spring, the prevailing winds are west and southwest. In summer, west to southwest winds are about equal in frequency to east and northeast winds; no other wind directions are important. Gales are rare, and not seasonal. Most wind observations show velocities under 8 m.p.h. For about 2 months in winter northerly winds may drift ice into the south end of Yonghung-man. A heavy swell is felt only after storms from the east. The tidal range is 1.5 feet; the high water interval at full and change is 3 hours 17 minutes.

Good holding ground fronts this beach and considerable protection is afforded by the numerous islands which lie across the entrance to Yonghung-man (*Eikō-wan*). Well sheltered anchorage over a mud bottom in 7 to 9 fathoms is available in

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FIGURE 4038
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a (62).
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COASTS AND LANDING BEACHES

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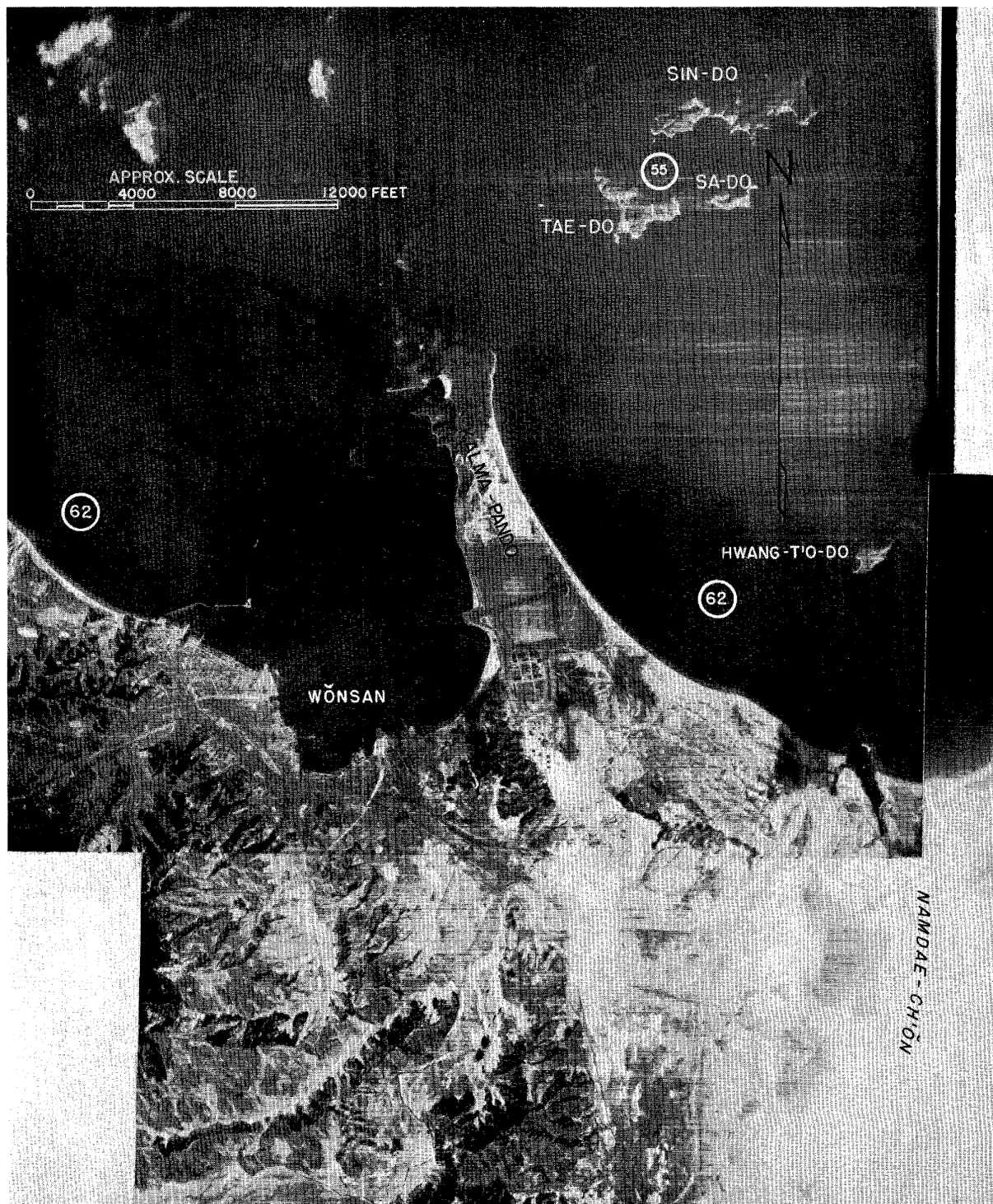


FIGURE IV - 31. East coast. Southern part of Yonghung-man (*Eikō-wan*). Beach areas (55) and (62). Area covered by this figure is enclosed by shaded strip on FIGURE IV - 30. A.A.F. 468BG/4MR44, dated 21 December 1944.

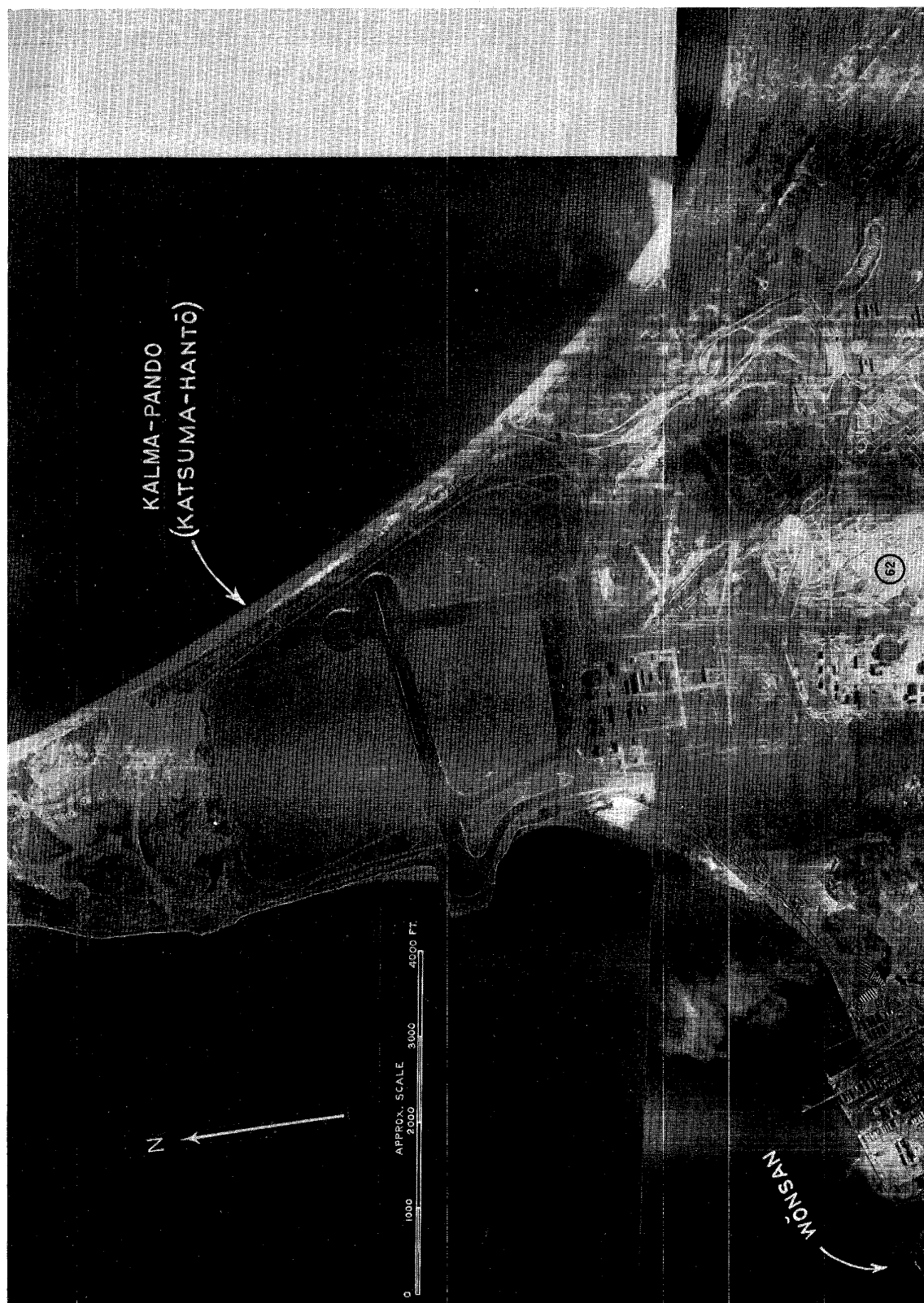


FIGURE IV - 32. East coast. Vicinity of Wonsan (Genzan), Beach area (62).
Area covered by this figure is enclosed by shaded strip on FIGURE IV - 30. A.A.F. 468BG/4MR44, dated 21 December 1944.

Songjon-man (*Shōden-wan*). Wonsan-hang (*Gensan-kō*) is sheltered, and good anchorage in 6 to 7 fathoms over a mud bottom is available in the outer part of the bay except when northerly winds sweep a swell into the bay. In winter Songjon-man may become covered with thin ice which is readily broken up by strong winds; northerly winds will drive it into the head of Wonsan-hang. There are 20 fathoms of water about 10 miles off the entrance to Yonghung-man; the bottom is generally sand.

3. CHARACTER OF BEACH. (FIGURES IV - 31 to IV - 41) At the southeast, the beach terminates against a small hilly cape. From the southeast end to the tip of Kalma-pando (*Katsuma-bantō*), the beach averages 200 feet in width, and is interrupted by 2 river mouths. The tip of the peninsula is rocky and hilly, with several rocks near shore. The beach continues as a strip 10 to 20 feet wide on the harbor side of the peninsula, is interrupted by the harbor works, then continues to the northwest and north in a smooth arc. The segment from the harbor northward averages 100 to 150 feet in width, and is interrupted by numerous streams and small rocky points where hills come down to the shore. The beach narrows in front of the hilly zones. It is composed of firm sand, with a slope probably of about 1 on 30. Surf is light, except with occasional

storms from the east. The heavy surf from these storms probably causes the beach to erode and become steeper and narrower. Shore drift on the southeast end of the beach is toward the tip of Kalma-pando; elsewhere there is no predominant trend. Outside of the harbor works at Wonsan, the only structures on the beach are a few small piers scattered along the shore. There are dwellings scattered along most parts of the beach area. Water can be obtained from the many small streams.

4. ADJACENT TERRAIN AND EXITS. The beach is backed by alternate hills and small river flats. Wonsan lies on a crescentic flat at the south end of Yonghung-man, and is backed by hills and mountains. Kalma-pando (*Katsuma-bantō*) is low and flat, and is covered to a large extent with soft sand; its southern part is occupied by Genzan (Wonsan) airfield (Chapter XIV) (FIGURES IV - 31 and IV - 32). A second airfield in the vicinity, known as Genzan North, is reported as having been under construction prior to April 1945 (Chapter XIV). The main east coast highway and railroad are within 2 miles of the beach at the eastern base of Kalma-pando. Northwestward from Wonsan they pass behind the coastal hills (FIGURE IV - 33), but return to the shore in the vicinity of Mump'yong-ni before turning northwestward and receding from the north end of the beach.

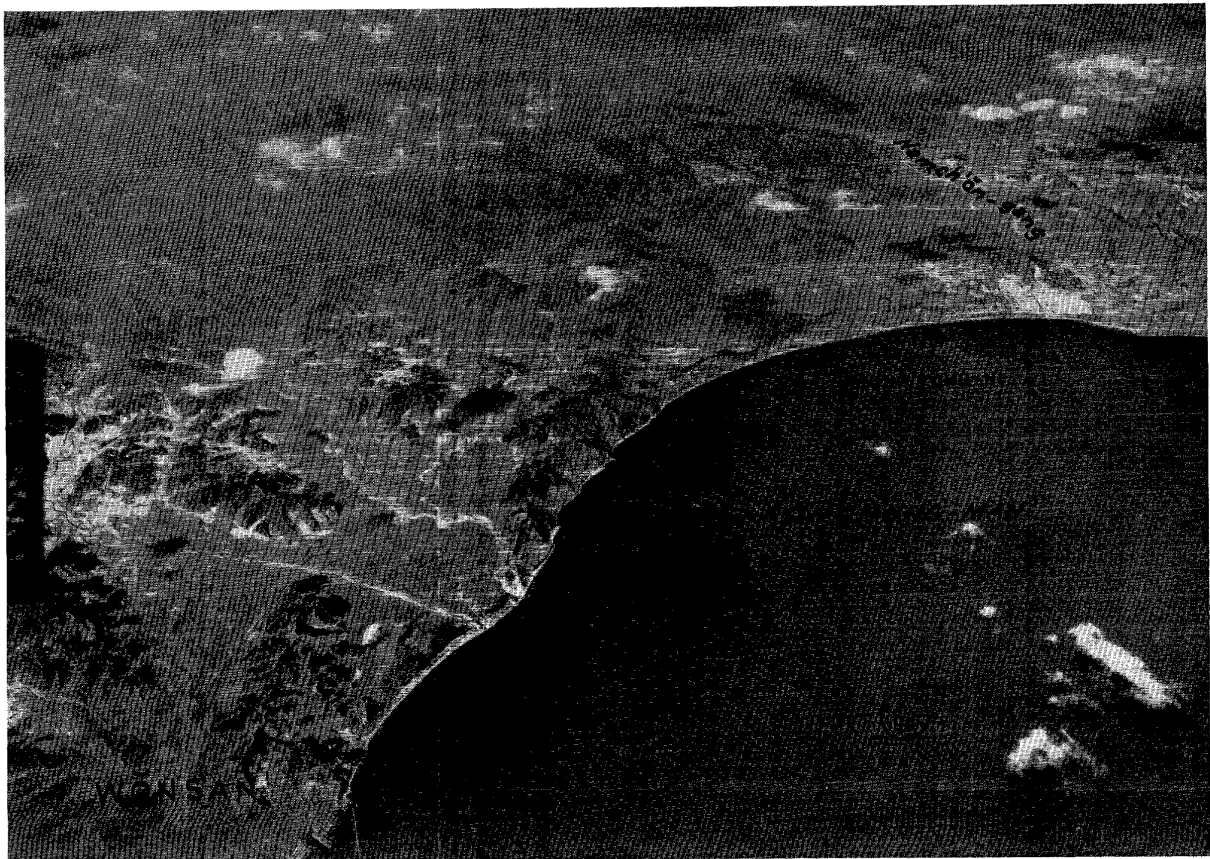


FIGURE IV - 33. East coast, Yonghung-man (*Eikō-wan*). Southern part of beach area (62). Oblique aerial view looking westward. Approximate position of Mump'yong-ni, 39°13'N, 127°22'E. Angle of view of this figure is indicated by shaded strip on FIGURE IV - 30. A.A.F. 468BG/4MR44, dated 21 December 1944.



FIGURE IV - 34. *East coast, Vicinity of Wonsan (Genzan).*
Beach area (62).

Mouth of river Namdae-ch'on, 1 mile west of southeastern end of beach area, looking northeastward. Outer part of sandspit (left middle-ground) appears partly submerged on FIGURE IV - 31. Extreme left background, part of Hwangt'o-do (Kunto Somu). Faintly seen on horizon, left center, Ung-do (Ko To); right center, Yo-do (Rei-tō).

Approximate position $39^{\circ}08'30''N$, $127^{\circ}31'30''E$;
U.S.H.O. chart 3249.



FIGURE IV - 36. *East coast, Vicinity of Wonsan (Genzan).*
Beach area (62).

View southwestward toward beach between base of Kalma-pando (Katsuma-bantō) and Namdae-ch'on river mouth. About 1934. Approximate position $39^{\circ}09'N$, $127^{\circ}30'30''E$; U.S.H.O. chart 3249.



FIGURE IV - 35. *East coast, Vicinity of Wonsan (Genzan).*
Beach area (62).

View south-southeastward over river Namdae-ch'on near its mouth, which is 1 mile west of southeastern end of beach area. Approximate position $39^{\circ}08'N$, $127^{\circ}32'E$; U.S.H.O. chart 3249.

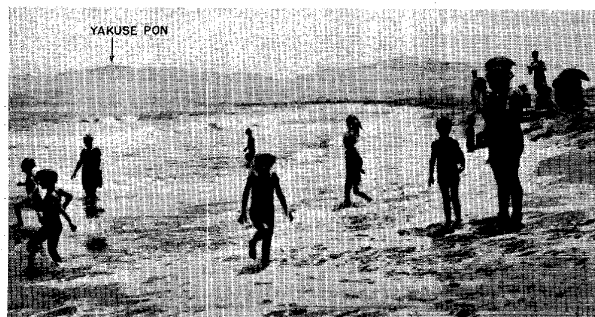


FIGURE IV - 37. *East coast, Vicinity of Wonsan (Genzan).*
Beach area (62).

Beach extending southeastward from base of Kalma-pando (Katsuma-bantō), looking southeastward. Approximate position $39^{\circ}10'N$, $127^{\circ}29'30''E$; U.S.H.O. chart 3249.



FIGURE IV - 38. *East coast, Vicinity of Wonsan (Genzan).* Beach area (62).

Panorama from eastward (left) to southeastward, showing beach extending southeastward from base of Kalma-pando (Katsuma-bantō). In foreground, stream mouth at southeast corner of present airfield site (compare FIGURES IV - 31 and IV - 32). Center background, Saglio Point; left center skyline, Irari-kaku (Ilari Point) and Umi-do (Umi To); larger island on left is Hwangt'o-do (Kunto Somu).

Approximate position of viewpoint, $39^{\circ}09'30''N$, $127^{\circ}29'30''E$; U.S.H.O. chart 3249.



FIGURE IV - 39. *East coast. Vicinity of Wonsan (Genzan).*
Beach area (62).

View north-northeastward from base of Kalma-pando (*Katsuma-bantō*), near stream mouth seen in FIGURE IV - 38, showing firm sand beach. In background, islands of Tac-do (*Dai-tō*, Kun Somu), Sa-do (*Shō-tō*, Chakun Somu), and Sin-do (*Shin-tō*, Soku Semu) (beach area (55)), with Hodo-pando (*Koto-bantō*) (peninsula) on skyline beyond. Approximate position $30^{\circ}10'N$, $127^{\circ}29'30''E$; U.S.H.O. chart 3249.



FIGURE IV - 40. *East coast. Vicinity of Wonsan (Genzan).*
Beach area (62).

View north-northwestward along eastern side of present airfield site on Kalma-pando (*Katsuma-bantō*), from a point near the base of the peninsula. Approximate position $39^{\circ}10'N$, $127^{\circ}29'30''E$; U.S.H.O. chart 3249.



FIGURE IV - 41. *East coast. Vicinity of Wonsan (Genzan).*
Beach area (62).

View west-southwestward from beach near village of Tusan-ni (Ton-anri) at western base of Kalma-pando (*Katsuma-bantō*) toward harbor works of Wonsan. Approximate position $39^{\circ}09'30''N$, $127^{\circ}28'30''E$; U.S.H.O. chart 3249.

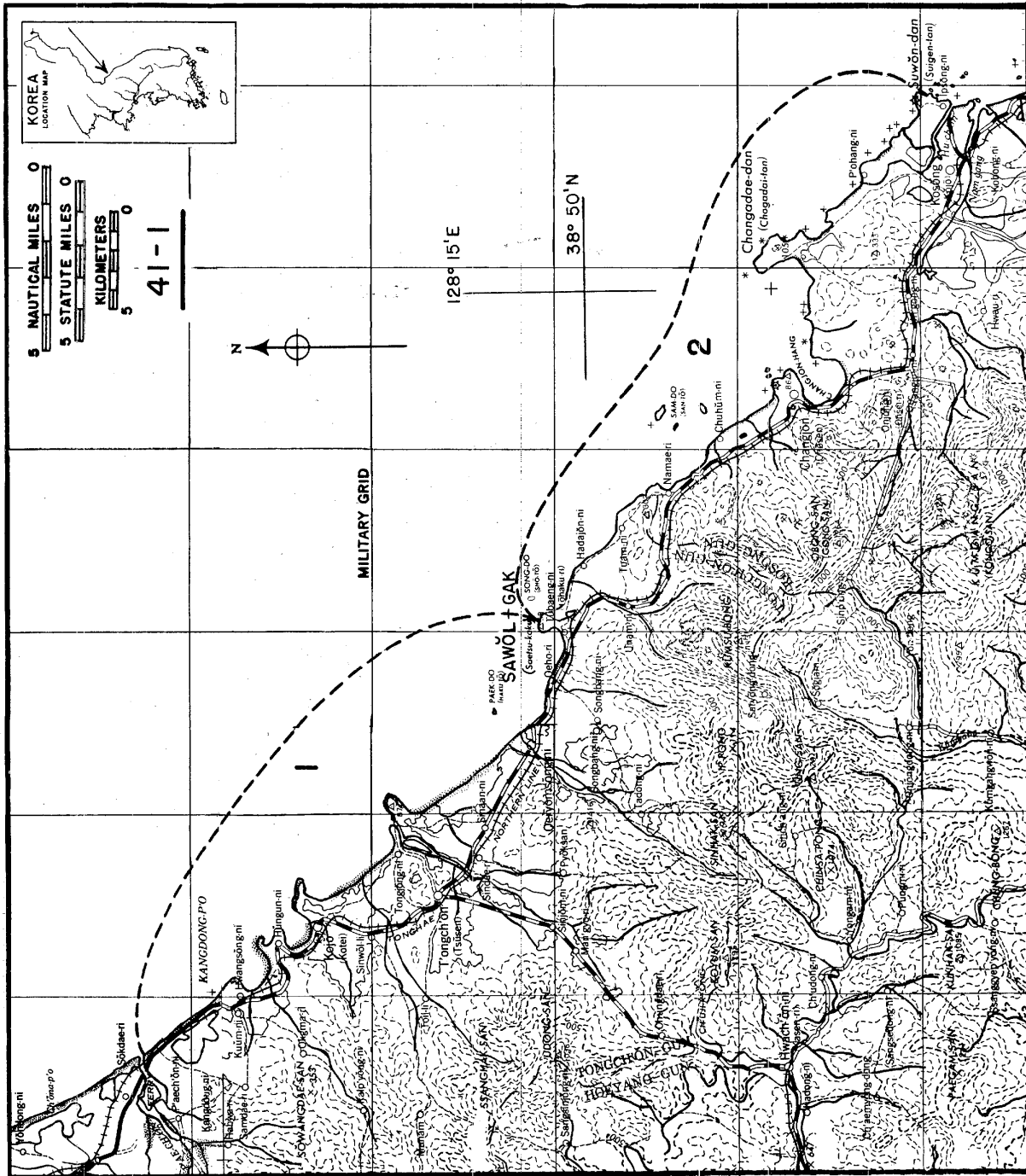


FIGURE IV - 42. Coastal subsector 41 I.
Beach areas are shown on PLANS 9, 10, and 11.



FIGURE IV - 44. East coast. Vicinity of Kojo-p'o (Kotei Ho).
View southward toward peninsula east of Kojo-p'o. Basalt rock marked "A" is also marked "A" on FIGURES IV - 43 and IV - 45. 1928.
Approximate position 38°57'45"N, 127°54'40"E; U.S.H.O. chart 5668 (inset).



FIGURE IV - 45. East coast. Vicinity of Kojo-p'o (Kotei Ho).
Beach areas (70) and (71).

View west-northwestward from near lighthouse on Ch'ongsok-tan (Chonsoku Kutchi) toward entrance to Kojo-p'o. Basalt rock marked "A" is also marked "A" on FIGURES IV - 43 and IV - 44. Left background, beach fronting village of Ch'ongsong-ni (*Sōseki-ri*, Chonsokuri). 1930. Approximate position of foreground, 38°57'45"N, 127°54'40"E; U.S.H.O. chart 5668 (inset).

The south shore of the narrow peninsula is steep and rocky. Immediately south of its base is a short stretch of sandy beach backed by the village of Ch'ongsong-ni (*Sōseki-ri*, Chonsokuri) (FIGURE IV - 45 and FIGURE IV - 46). After a brief interruption where a hill spur reaches the coast, the beach is continued southeastward about 3½ miles to the mouth of a river (beach area (71)). Wild grass grows behind the shore, and farther inland rice paddies spread over a plain which joins the one behind Kojo-p'o (Kotei Ho) and narrows through a sandy valley between hills. The beach is interrupted near its center by a stream and near its south end by a short stretch of isolated cliffs backed by a low hill.

East of the river mouth which terminates this beach is a roughly triangular headland, Kusin-dan (*Kyūshin-tan*; U.S. H.O. chart 3248), the base of which is low and is cultivated in rice. A 283-foot hill rises near its extremity, surrounded by cliffs at the water's edge north and east. From the south side of its base begins a 7½-mile beach (beach area (72)), backed by a broad valley at the northwest end, which narrows southeastward as high hills approach the shore. Wild grass grows near the water and rice is cultivated all along the plain. There is a marshy area south of a stream which empties into the sea ½



FIGURE IV - 46. East coast. Vicinity of Kojo-p'o (Kotei Ho).
Beach area (70).

View southwestward from base of peninsula terminating in Ch'ongsok-tan (Chonsoku Kutchi) over beach fronting village of Ch'ongsong-ni (*Sōseki-ri*, Chonsokuri). Approximate position 38°57'40"N, 127°54'20"E; U.S.H.O. chart 5668 (inset).

mile from the northwest end of the beach. Several villages occupy the plain and one lies at the southeast extremity of the beach where an open cove is formed by Sawol-gak (*Saetsu-kaku*), a hilly promontory which projects northward at this point. About ½ mile of cliffs lines the straight northern edge of this headland and a cliffy island lies among shoals ½ mile off shore.

2

The first 2½ miles of this subdivision is a stretch of beach (beach area (73)) backed by a plain where a little rice is grown among areas of scrub pine and wild grass. Hills rise steeply on the west side of the plain. Two streams which flow into the sea about midway along the sandy stretch run through a valley between the mountains on the southwest. These mountains extend seaward, terminating along a rough, irregular shore which begins at the southeast end of the sandy stretch and continues for about 1½ miles (U.S.H.O. chart 5667). A series of rocky and cliffy points is interspersed with small coves, a few of which have short beaches at their heads (beach area (74)). About 1½ miles east of this irregular stretch is Samdo (San-tō), a group of 3 hilly islands surrounded by islets, rocks and shoals. The northernmost and largest island is 800 yards long and 226 feet high.

I. P'ae-ch'on to Suwon-dan (Suigen-tan).

(39°02'N, 127°49'E; 38°41'N, 128°22'E)

(PLANS 9 to 11; FIGURE IV-42; U.S.H.O. charts 3248, 5667, and 5668)

(1) Coast.

The approaches to this coastal subsector are generally clear, but shoals exist near shore, and there are several small islands. The 10-fathom curve varies between about 160 yards and 1 1/4 miles off shore; the distance to the 100-fathom line decreases from approximately 20 miles to 4 miles off the southern part of the subsector. Mud and sand compose the bottom sediment, but fine sand predominates in the bays.

Narrow sandy stretches backed by mountains occupy much of the northern half of this coast; the southern half is largely rugged. Frequent cliffy or steep, rocky stretches occur, and many small rocky islands lie close to the shore.

A chain of mountains with several summits of over 3,000 feet rises within 10 miles of the northern half of this coast and approaches to within 5 miles of the southern shoreline. Streams and narrow valleys cut through the mountains, the valleys broadening near the sea. In these small coastal plains rice is grown, and on the hills near the water vegetation is sparse, with wild grassland predominating. Scrub pine and other conifers are also found in these areas, and the mountains farther inland are forested with conifers and broadleaf trees.

1

South of the mouth of the P'ae-ch'on the beach described at the end of the previous subsector continues (beach area (67), TABLE IV-8). Low hills bordering the south side of the P'ae-ch'on valley extend toward the beach and about 3/4 mile south of the river a lagoon begins (U.S.H.O. chart 3248). This lagoon closely backs the 1,000-foot-wide sandy stretch along the ocean. A half-mile south of the mouth of the P'ae-ch'on a single island rock lies close off the beach. A village lies at the south end of the lagoon facing the sea, and off this portion of shore lie several island rocks.

Low hills encircle the west side of the lagoon and approach the shore to southward. The beach terminates at a rocky promontory ending in a series of round headlands and very small coves, the central headland rising to a 208-foot hill.

This central rocky point is the northern entrance point of a mile-wide cove, the shores of which are largely composed of beach (beach area (68), TABLE IV-9). A stream empties into the head of the cove about midway, and a round, rocky headland extends into the cove on the southeast side of the stream mouth. The beach northwest of the stream mouth is backed by a belt of conifers; behind this belt, rice is under cultivation westward along the wide stream valley. The southeastern part of the bayhead has a short sandy beach closely backed by hills.

The cove just described is separated from Kojo-p'o (Kotei Ho; inset on U.S.H.O. chart 5668) by a rounded headland, 3/4 mile wide and projecting seaward about the same distance. This headland is formed by 2 spurs from the inland hills, which terminate seaward in short cliffy stretches along its northern and eastern sides. The remainder of the headland shores are fringed with rocks, except on the northeast side where there is a small cove 1/4 mile wide between the terminations of the 2 spurs. The head of the cove has a sandy shore (beach area

(69)), near the southern end of which a stream empties into the cove. North of the stream, the bayhead shore is backed throughout by the village of Hungun-ni (Chikyuri), behind which the narrow valley of the stream winds between the hill spurs. About 1/3 mile off the entrance to the cove lies a group of 3 hilly islands (called San To on the chart; not shown on PLAN 10). Each is about 1/4 mile long and over 100 feet high; the seaward sides are cliffed, the landward sides low but rock-fringed. Between these islands and the cove indenting the headland is the anchorage known as Ch'igung-myoji (Chikyu Byochi). (FIGURE IV-43)

The cliffs along the eastern face of the headland mentioned above form the northwestern entrance point of Kojo-p'o (Kotei Ho), a small bay and harbor (Chapter VI). Its north shore is steep and rock-fringed, but a low sandy shore borders the entire bayhead (beach area (70)). The town of Kojo (Kotei, Koteiri) lies behind the southeast bayhead, which is partly enclosed by breakwaters to form a fishing harbor; the sandy shore fronting the town is not quayed, but 3 short piers project from it. Just west of the town an isolated 377-foot hill rises close behind the beach. A plain backs the beach northwest of this, bordered by hills north and west, but spreading southward over a considerable area. A stream flowing northeastward over this plain empties into the southeast end of the bayhead after running through the town of Kojo, where it broadens into a small lake in the middle of the town. The east shore of Kojo-p'o is low but is fringed with rocks. Hills rise behind the shore and terminate northward in a cliffy, rock-fronted stretch which forms the southeastern entrance point of the bay.

Cliffs continue eastward along the north shore of a narrow peninsula; here 70-foot columns of basalt rise sheer from the water, and the entire shore is fringed with rock islets and reefs (FIGURES IV-43 to IV-45). A group of these islets also lies 1/4 mile eastward off Ch'ongsok-tan (Chonsoku Kutchi), the eastern extremity of the peninsula.

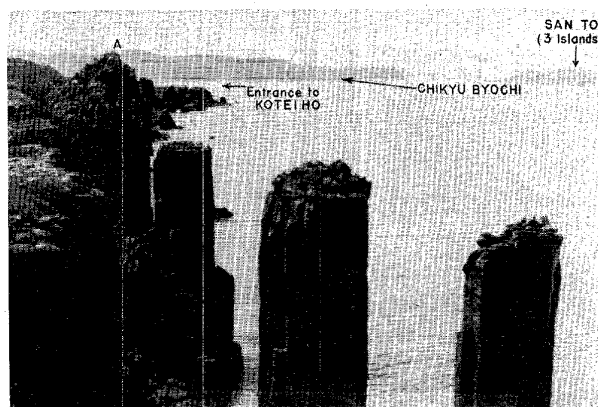


FIGURE IV-43. East coast. Vicinity of Kojo-p'o (Kotei Ho). Beach areas (69) and (70).

View west-northwestward from near lighthouse on Ch'ongsok-tan (Chonsoku Kutchi) toward Ch'igung-myoji (Chikyu Byochi) and entrance to Kojo-p'o. In foreground, basalt rocks fringing north side of peninsula; rock marked "A" is also marked "A" on FIGURES IV-44 and IV-45. Approximate position of foreground, 38°57'45"N, 127°54'40"E; U.S.H.O. chart 5668 (inset).

Southeast of the irregular stretch of coast just described is a 3-mile beach (beach area (75)), which is broken at 1-mile intervals by the mouths of streams, the third stream being at the southeast extremity of the beach. Behind the first mile of beach, dunes backed by an area of wild grass cover a small plain, which is bounded on the northwest by hills and on the south by the stream. The second mile of beach is backed by hills $\frac{1}{4}$ mile inland, and a village lies at the base of the hills near the north end where the first stream flows into the sea. South of the second stream mouth, the third mile of beach is backed by a triangular plain covered with wild grass, a few patches of scrub pine, and some coniferous trees. The railroad and secondary highway parallel the shore about $\frac{3}{4}$ mile inland, near the base of hills which rise west of the plain. Hills to westward are cut by the valley of the streams crossing the plain.

The rocky, steep shore of a promontory runs east of the end of this beach. High hills, steep on the seaward side, cover the promontory and extend inland toward other hills, but are interrupted by a lake about a mile inland, near the southern edge of the plain just described. A little rice is grown north of the lake.

A shallow cove separates the north and southeast extremities of the large promontory just described, and two small, high islands lie in a row to eastward, close off the north point of the promontory. The southeasternmost point of the promontory, called Keimatsukan, is the northwestern entrance point of Changjon-hang (*Chōsen-kō*). The north shore of this bay is steep and rocky and covered with conifers for $\frac{1}{2}$ mile west of the entrance point, as far as Ch'ongnyong-dan (*Seiryū-tan*), a promontory rising to a 148-foot hill. A breakwater extending from this promontory protects the inner harbor of Changjon-hang (Chapter VI). The port facilities, comprising over 30 small piers, extend along the northern part of the low bayhead shore for about $\frac{3}{4}$ mile, fronting the small town of Changjon (*Chōsen*). The remainder of the bayhead shore is bordered by a sandy beach (beach area (76)), interrupted near the center of the bayhead by a rocky point with shoals off its north side and topped by a spur of hills which closely back the beach and port area to the north. South of the rocky point the hills recede, and the beach along the southern bayhead is backed by 3 valleys separated by low spurs. Two stream mouths break this part of the beach, and in the low-lying area immediately behind it rice is under cultivation among areas of wild grass. The railroad and secondary highway closely back most of the beach, then turn southward along the easternmost stream valley.

The east shore of Changjon-hang is rocky, rising to steep hills close to the shore. The rugged promontory of Wont'ongni-

dan (Gentsuri Tan) is the southeast entrance point of the bay, and beyond it some 3 miles of coast run eastward to the base of a rugged peninsula. Over the first 2 miles, beaches fronted by rocky shoals alternate with rocky points rising to steep hills. Tae-dan (Dai Tan), a narrow hilly promontory, projects from the center of this stretch, and is flanked by the two longest beaches (beach area (77)). The western beach is backed by the valley of a stream which flows into its eastern end. The third mile consists of continuous sandy beach (beach area (77)), broken only by the outlet of a lagoon which backs the central part of the beach. Low hills closely back the western part of the beach, which is fronted by rocky shoals, and a hill spur approaches the shore on the east side of the lagoon. On either side of this spur are lowland areas in which rice is grown.

The rugged, irregular shore of the peninsula, the northern extremity of which is Changadae-dan (*Chogadai-tan*), is a series of small points and coves on the west and a series of larger points and deeper indentations on the north and east. Shoals and rocky islets fringe the peninsula and a chain of hills attaining a 371-foot summit extends close to the shore. Conifers and wild grass grow on the hills. Cliffs edge the east side of Changadae-dan and the next point eastward; in the cove between them is a short stretch of sand. There is a second cove near the eastern side of the base of the peninsula, with a short beach at its head, and the steep, shoal-fringed promontory south of it is the first of 5 similar headlands to southeastward. The last of these headlands (U.S.H.O. chart 3248) is Suwon-dan (*Suigen-tan*), terminating this subsector. Between the 5 rocky promontories are 4 sandy beaches ranging in length from $\frac{1}{4}$ mile to slightly over a mile (beach areas (77) and (78)).

Behind each beach lies an irregular area of lowland where rice is under cultivation. The second and longest beach is backed by a belt of conifers and scrub pine, but rice is grown in a valley behind the northern half of this belt. Hills enclose the 2 northernmost lowlands, but recede inland from the 2 southernmost beaches. An alluvial plain crossed by several streams occupies this larger lowland, which is scattered with villages and cultivated partially in rice. Vegetation immediately behind the two southern beaches and on the hills of the adjacent promontories consists of wild grass, and scrub pine and other conifers. Behind the center of the southern lowland is a lake, on the west shores of which rise steep hills. Inland, behind a spur of hills extending from the north, more rice paddies are found along the valley of the Nam-gang, a river which flows southeastward. Its valley, which is followed by the railroad and secondary highway, opens onto the plain just described.

(2) Landing beaches.

TABLE IV - 9

LANDING BEACHES OF COASTAL SUBSECTOR 41 I
(PLANS 9 to 11)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(68) SE of Hwangsong-ni. (PLAN 10).	Clear; approach constricted.	2 beaches: NW 0.8 mi.; SE 0.3 mi.	75 to 100 ft.	1 on 25.	Surf heavy with NE winds.	Firm sand.	Alluvial flat with pine groves at shore, backed by rice fields on N, high hills on S.	Improved road and R.R. within 0.5 mi.
(69) Vicinity of Hungun-ni. (PLAN 10).	Approach constricted; islands off-shore (not shown on PLAN 10); N part rock-fringed.	0.5 mi.	100 to 150 ft.	1 on 30.	Surf light.	Firm sand.	Village built along narrow sandy strip; backed by narrow valley between hills.	Highway and R.R. accessible through narrow valley.
(70) Kojo-p'o. (PLAN 10).	Generally clear.	1.5 mi., interrupted by rocky shore.	125 to 150 ft.	1 on 30.	Surf light except with NE winds.	Firm sand.	River plain in rice with isolated hill at shore; flanked by hills; small fishing harbor at SE, backed by town of Kojo.	Highway and R.R. skirt shore.
(71) SE of Kojo (Kotei) (PLAN 10; FIGS. IV - 45 and IV - 46).	Generally clear; rocky on NW end.	4 mi., interrupted by streams and rocky points.	125 to 150 ft.	1 on 30.	Surf heavy.	Firm sand.	Sandy strip 700 ft. wide backed in part by lagoon and swamp; rice fields farther inland.	Highway and R.R. within 1 mi. of NW end of beach.
(72) Vicinity of Oeryomsong-ni. (PLANS 10 and 11).	Generally clear; island off center.	7.6 mi. beach, plus 0.7 mi. rocky shore.	125 to 150 ft.	1 on 30.	Surf heavy with N quadrant winds.	Firm sand.	Alternate marsh, dunes, and rice fields; hills back beach in SE, swing inland to NW.	Highway and R.R. back SE end; 2.5 mi. inland from NW end.
(73) Vicinity of Hadajon-ni. (PLAN 11).	Partly obstructed; islands to NE.	3 mi., interrupted by small streams.	100 to 125 ft.	1 on 20.	Surf heavy.	Sand and pebbles.	Sand-and-boulder plain 1 mi. wide covered with scrub and grass; backed by steep hills.	Highway and R.R. near NW end.
(74) NW of Namae-ri. (PLAN 11).	Partly obstructed.	4 pocket beaches; average 0.2 mi.	25 to 50 ft.	1 on 15.	Surf heavy.	Sand and pebbles.	Backed directly by steep hill slopes.	Isolated.
(75) Vicinity of Chuhum-ni. (PLAN 11).	Islands off shore.	3 mi., interrupted by streams.	100 to 125 ft.	1 on 30.	Surf heavy.	Firm sand.	Sandy strip 1 mi. wide behind ends, hills within 0.3 mi. at center.	Highway and R.R. parallel beach within 1 mi.
(76) Changjon-hang. (PLAN 11)	Channeled and partly obstructed.	1.7 mi., interrupted by rocky point and streams.	75 to 100 ft.	1 on 30.	Surf light except with NE winds.	Firm sand.	Sandy strip 300 to 400 ft. wide rising to rough hills and mountains; beach dominated by headlands.	Highway and R.R. skirt shore.
(77) Vicinity of Changadae-dan. (PLAN 11).	Obstructed.	Strip beaches; average 0.8 mi.	50 to 75 ft.	1 on 25.	Surf heavy; some protection afforded by Changadae-dan.	Sand; some pebbles.	Narrow sandy strips rising to steep hills cut by narrow valleys.	Isolated except for trails over hills.
(78) NW of Suwon-dan. (PLAN 11).	Obstructed.	2 beaches, totaling about 2 mi.; SE beach divided by stream.	75 to 100 ft.	1 on 25.	Surf heavy.	Sand.	Interconnecting coastal flats, covered with grass and evergreen groves; some rice.	Highway and R.R. 2 to 3 mi. inland.

J. Suwon-dan (*Suigen-tan*) to Ongjin-dan (*Oshin-tan*).
(38°41'N, 128°22'E; 38°11'N, 128°37'E)
(PLAN 11; FIGURE IV - 47; U.S.H.O. charts 3319 and 5669)

(1) Coast.

The 10-fathom curve runs in general between ½ mile and 1 mile off shore in this coastal subsector; the 100-fathom curve

is from 2 to 4 miles off the southern part of the subsector, and up to 6 miles off the northern part. There are a few rocks and islets close inshore, particularly in the southern part. The coast consists in general of narrow sandy beaches, though many of the headlands are cliffy. Low areas immediately inland are usually planted to irrigated rice, but in general foothills rise gradually from near the shore to high mountains inland.

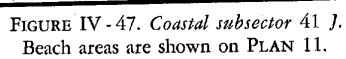




FIGURE IV - 48. East coast, Suwon-dan (Suigen-tan). View south-southeastward from immediately south of the point. Group of off-lying rocks is seen from a different angle in FIGURE IV - 50. 1916. Approximate position $38^{\circ}41'N$, $128^{\circ}22'E$; U.S.H.O. chart 3319.



FIGURE IV - 50. East coast. South of Suwon-dan (Suigen-tan). Beach area (79). Haegumgang (Kaikingo), at north end of beach area; view south-eastward, showing typical small pocket beach on north side of point. Group of off-lying rocks is seen from a different angle in FIGURE IV - 48. Approximate position $38^{\circ}40'N$, $128^{\circ}21'30''E$; U.S.H.O. charts 3319 and 5669 (inset F).

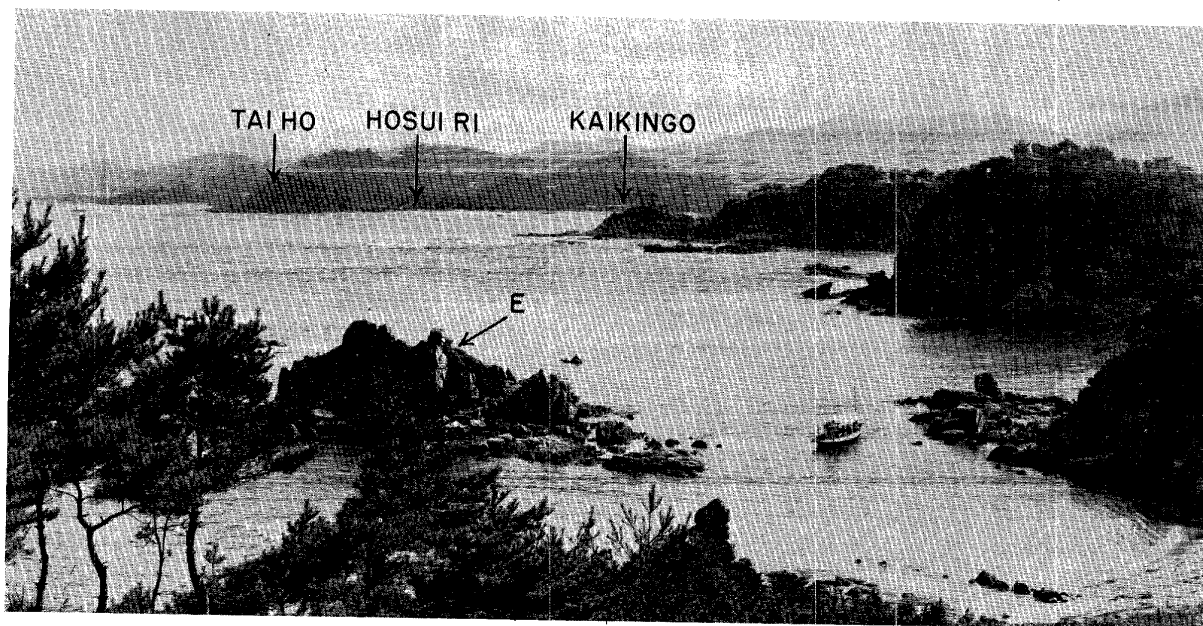


FIGURE IV - 49. East coast. South of Suwon-dan (Suigen-tan). Beach area (79). View southward from a point close south of Suwon-dan toward Haegumgang (Kaikingo) and village of Pongsu-ri (Hosui-ri), with island of Tae-bong (Tai Ho) obstructing river mouth immediately south of village. Approximate position of Haegumgang, $38^{\circ}40'N$, $128^{\circ}21'30''E$; U.S.H.O. charts 3319 and 5669 (inset F).

1

Suwon-dan (Suigen-tan; U.S.H.O. chart 3319) is the extremity of a large, hilly headland with cliffy shores. Rocks fringe the point, and over a $1\frac{1}{2}$ -mile stretch to south of it numerous rock islands and underwater rocks are scattered over an area which at the southern end of the stretch extends as much as a mile to seaward (FIGURES IV - 48 and IV - 50). The northern part of this $1\frac{1}{2}$ -mile stretch, as far south as the small reef-fringed promontory of Haegumgang (Kaikingo), is a series of cliffy points and coves (FIGURE IV - 49). Haegumgang has a small pocket beach on its north side (FIGURE IV - 50); south of it a sandy beach (beach area (79), TABLE IV - 10), interrupted by the mouth of the river Hu-ch'on, extends over $\frac{1}{2}$ mile to the mouth of a larger river, the Nam-

gang (Nan Ko) (FIGURES IV - 51 to IV - 54; U.S.H.O. chart 5669, inset F). The village of Ipsong-ni (Riseki-ri, Ritsusekiri) lies behind the short stretch of beach north of the Hu-ch'on (FIGURE IV - 52), and the village of Pongsu-ri (Hosui-ri) lies on a low neck of land on the north side of the mouth of the Nam-gang (FIGURES IV - 49 and IV - 54). The mouth of the Nam-gang is about $\frac{1}{4}$ mile wide, but is partly blocked by a hilly, wooded islet, Tae-bong (Tai Ho). The flood plains of these 2 rivers merge northwestward into the lowland described at the end of the preceding subsector. Between them, 2 miles inland, is the town of Kosong (Kōjō), through which the railroad and secondary highway pass, returning to the coast along the valley of the Nam-gang. From the south side of the



FIGURE IV - 51. East coast, South of Suwon-dan (*Suigen-tan*). Beach area (79). View east-southeastward along south side of Haegumgang (*Kaikingo*), showing northern end of beach fronting village of Ipsong-ni (*Risseki-ri*, *Ritsusekiri*). Approximate position $38^{\circ}40'N$, $128^{\circ}21'30''E$; U.S.H.O. charts 3319 and 5669 (inset F).



FIGURE IV - 52. East coast, South of Suwon-dan (*Suigen-tan*). Beach area (79). View northwestward from southeast tip of Haegumgang (*Kaikingo*) toward beach fronting village of Ipsong-ni (*Risseki-ri*, *Ritsusekiri*). Approximate position $38^{\circ}40'N$, $128^{\circ}21'30''E$; U.S.H.O. charts 3319 and 5669 (inset F).

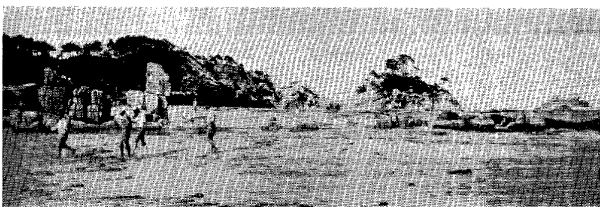


FIGURE IV - 53. East coast, South of Suwon-dan (*Suigen-tan*). Beach area (79). View northeastward across Hu-ch'on river mouth toward Haegumgang (*Kaikingo*) (right center). Village of Ipsong-ni (*Risseki-ri*, *Ritsusekiri*) is concealed by rocks on left. 1930. Approximate position $38^{\circ}40'N$, $128^{\circ}21'20''E$; U.S.H.O. charts 3319 and 5669 (inset F).

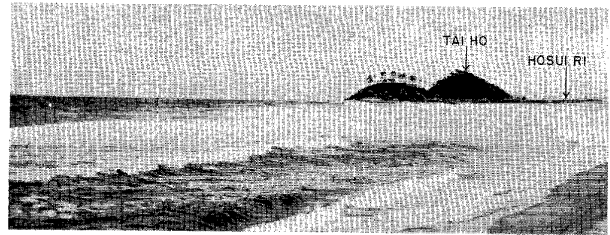


FIGURE IV - 54. East coast, South of Suwon-dan (*Suigen-tan*). Beach area (79). View south-southeastward from a point on the beach about 600 yards north of Pongsu-ri (*Hosui-ri*) village toward island of Tae-bong (*Tai Ho*) at mouth of river Nam-gang (*Nan Kan*, *Nan Ko*). 1930. Approximate position of Pongsu-ri, $38^{\circ}39'30''N$, $128^{\circ}21'30''E$; U.S.H.O. charts 3319 and 5669 (inset F).

mouth of the Hu-ch'on an improved road runs inland to join the highway near Kosong.

South of the Nam-gang, the remainder of this subdivision (U.S.H.O. chart 3319) is bordered by an interrupted sandy beach (beach area (79)), backed immediately inland by a narrow strip of uncultivated land and scrub pines. About 4 miles inland a tributary of the Nam-gang parallels the coast. Between this river and the shore are several valleys lying between hills from 500 to 675 feet high. These valleys are cultivated in rice, and a few small lakes are located in them. The hills are uncultivated, but there are a few coniferous trees on their slopes. Several trails and cart roads traverse the valleys.

2

The shores of this subdivision are low and sandy (beach areas (80) and (81)) except for several small cliffy promontories. A lake, $\frac{1}{2}$ mile long, lies near the shore just south of Pooejin-ni. The secondary highway parallels this entire stretch of coast at a distance of 200 yards or less. Immediately inland there are small areas of irrigated rice lying between low spurs of hills which rise gradually to a low mountain chain 2 miles inland. This range, about 1,200 feet high and covered with broad-leaf and coniferous forests, rises between the coast and the parallel river valley mentioned above, which is sandy and gravelly, with a few rice paddies. Trails and a few cart roads cross the mountains.

Just north of Chojin-dan (*Choshin-tan*), the promontory which terminates this subdivision, there is a small cliffy island, Cho-do (Cho To). The mainland coast just westward of the island is indented by two tiny bays lying between cliffy promontories.

3

The coast between Chojin-dan (*Choshin-tan*) and Kojin-dan (*Kyoshin-tan*) is in part low and sandy (beach area (81)), and in part cliffy. A stream flowing northward enters the sea just south of Chojin-dan. Hwajin-p'o (*Kashin-bo*), a lake about $1\frac{3}{4}$ miles long, lies close to the shore with its southern end about 1 mile northward of Kojin-dan. Its northern part is separated from the sea by a narrow isthmus, along the seaward side of which is a sandy beach (beach area (81)), fronting a former summer resort for Europeans (FIGURES IV - 55 to IV - 59). The lake outlet is at the north end of the beach (FIGURE IV - 58).

In low areas close to the shore of this subdivision, adjacent to the lake and in the valley of the stream mentioned above, there are several areas used for rice paddies. Low hills rise close to the shore and attain a height of about 2,400 feet 4 miles inland (FIGURE IV - 55). Scrub pines and other coniferous trees cover the foothills, which are mainly uncultivated; the mountain slopes are wooded with broadleaf and coniferous trees. The railroad and an improved road parallel the coast throughout. The highway runs between the lake and the coast; the railroad borders the inland shore of the lake.

Kojin-dan (*Kyoshin-tan*) is the rock-fringed extremity of a promontory 282 feet high which projects ½ mile southeastward from the general line of the coast. The coast between Hwajin-p'o (*Kashin-ho*) and this point is cliffy.

4

The coast between Kojin-dan (*Kyoshin-tan*) and Tokp'o-dan (*Tokuho-tan*) is low and sandy (beach area (82)), except for the shores of the promontory ending in Tokp'o-dan. This stretch is broken by the mouths of 3 streams. The northernmost stream empties into the sea through 2 outlets just south of Kojin-dan (inset on U.S.H.O. chart 3319). Between the 2 outlets the stream parallels the beach for over ½ mile. The other stream breaks the coast 3 and 4¼ miles southward of Kojin-dan (U.S.H.O. chart 3319). A narrow strip of reedy marshland lies immediately inland just north of the middle river, which forms a small lagoon near its mouth. In the valleys of the streams there are many rice paddies, particularly near the coast between the two southernmost streams. The valley of the middle stream is the widest of the three. In most places hills rise close to the coast and are covered with coniferous trees. Farther inland there are high mountains with broadleaf and coniferous trees on the upper slopes and scrub pines at lower altitudes. The hills near Tokp'o-dan are lower than those in the northern part of the subdivision. The railroad and secondary

highway follow the coast at varying distances up to 1½ miles inland throughout the subdivision. Many trails and a few unimproved roads cross the hills and mountains inland. The town of Kojin-ni (*Kyoshin-ri*) closely backs the beach at the north end of the subdivision, and the town of Kansong (*Kanjo*) is about 1½ miles inland near the southern end; an airfield is reported in the vicinity of the first-named town (Chapter XIV).

5

The coast of this subdivision is bordered by a series of sandy beaches (beach areas (83) to (85)), interrupted by rocky points and stream mouths. Several islets lie close off shore. Low spurs of mountains extend almost to the shore in most places and are covered with scrub pines and other coniferous trees. In valleys between these spurs and along stream banks, rice is cultivated. Mountains rise to over 4,000 feet about 6 miles inland. The slopes of these mountains are forested with broadleaf and coniferous trees. A few small lakes are located near the shore and two large ones lie close together near the south end of the subdivision. The southern of these large lakes, Ch'ongch'o-ho (U.S.H.O. chart 5669, inset K), is separated from the sea by a narrow sand neck, except at its north end, where there is an outlet. The outlet leads into a small artificial harbor fronting the village of Sokch'o-ri (*Sokusō-ri*; Tongch'o-ri on PLAN 11); this harbor is described in Chapter VI in conjunction with that of Taep'o-ri (*Taibō-ri*), which is on the south side of Ongjin-dan (*Ōshin-tan*) and falls within the next subsector.

The railroad and secondary highway closely parallel the coast throughout this subdivision. Many trails and unimproved roads cross the hills and mountains to the interior, and a secondary highway leads inland from Hwangp'o-ri at the south end of beach area (83).

(2) Landing beaches.

TABLE IV - 10
LANDING BEACHES OF COASTAL SUBSECTOR 41 J
Reliability GOOD. (PLAN 11)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(79) S from Ipsong-ni. (Figs. IV - 51 to IV - 54).	Obstructed.	Strip beaches; average 0.4 mi.	75 to 100 ft.	1 on 25.	Surf moderate; heavy with E winds.	Firm sand.	Sandy pine- and grass-covered delta flat; narrows rapidly inland.	Highway and R.R. easily accessible.
(80) S from Poeejin-ni.	Generally clear; some scattered rocks.	4.1 mi., interrupted by rocky points.	125 to 150 ft.	1 on 30.	Surf moderate; heavy with E winds.	Firm sand.	Sandy strip 400 to 1,000 ft. wide, backed by terraced rice fields on hill slopes.	Highway and R.R. within 1,000 ft.
(81) Vicinity of Ch'odo-ri. (Figs. IV - 55 to IV - 59).	Generally obstructed.	Pocket beaches; average 0.3 mi.	75 to 100 ft.	1 on 20.	Surf moderate; heavy with E winds.	Firm sand.	Very narrow sandy strips backed by terraced rice fields on hill slopes; large lake in S.	Highway and R.R. accessible.

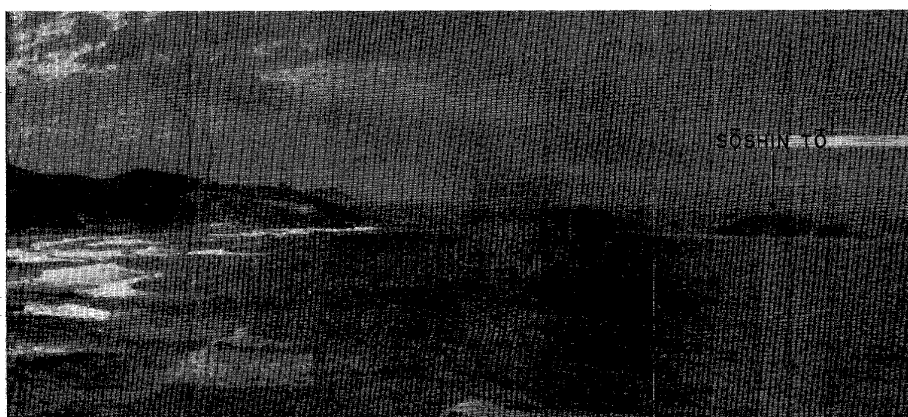
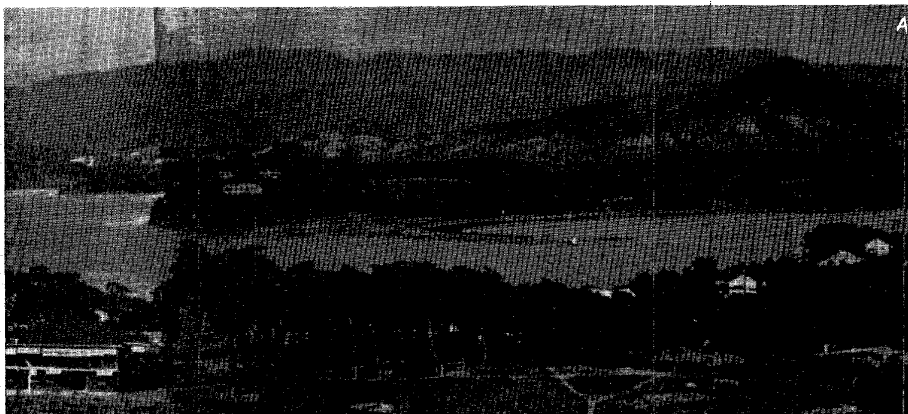


FIGURE IV - 55. *East coast. Northwest of Kojin-dan (Kyosbin-tan).* Panorama (in 2 sections) from SSW (upper left) to N (lower right) over Hwajin-p'o (Kashin-bo) inland terrain. View is taken from villa marked "A" on FIGURES IV - 58 and IV - 59. On right is the sea. Approximate position 38°28'N, 128°26'E; U.S.H.O. chart 1000.

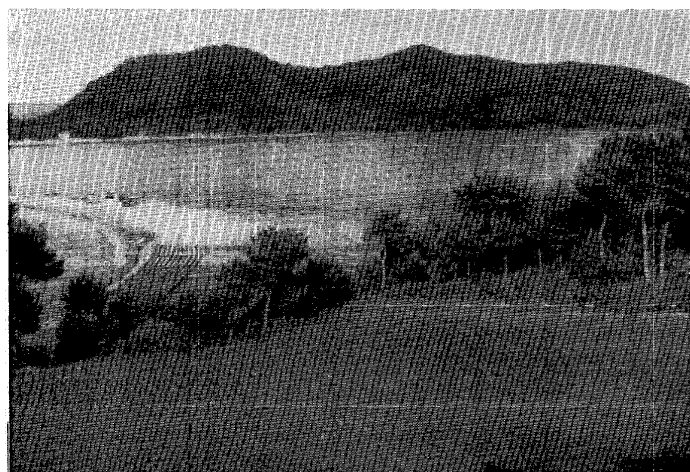


FIGURE IV - 56. *East coast. Northwest of Kojin-dan (Kyosbin-tan).* Panorama from NNE (left) to ESE over Hwajin-p'o (Kashin-bo) lake and beach resort, take part. Beach resort is built on narrow spit between lake and sea; lake outlet is at extreme left. Is 10). 1937, before construction of bridge seen in FIGURE IV - 55. Approximate position 38°28'N, 128°26'E; U.S.H.O. chart 1000.

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Beach area (81).
n-bo) lake and beach resort, showing typical
it, island of Ch'ojin-do (*Sōshin-tō*). 1939.
rt 3319.



Beach area (81).
n from inland side of lake near the narrowest
and in left background is Ch'ojin-do (*Sōshin-*
N, 128°26'E; U.S.H.O. chart 3319.

Confidential

COASTS AND LANDING BEACHES

Page IV - 67

TABLE IV - 10 *Continued*

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(82) S from Kojin-ni.	Generally clear; obstructed at center.	Beach 5.2 mi.; rocky strip 0.7 mi.	125 to 150 ft.	1 on 30.	Surf moderate; heavy with E winds.	Firm sand.	Small valley flats in rice in center; sand strips backed by hills on ends; lagoon in center.	Highway and R.R. skirt shore at N end, 1.5 mi. inland at center.
(83) Vicinity of Chuk-to.	Generally obstructed; Chuk-to off center.	4.1 mi.	125 to 150 ft.	1 on 30.	Surf moderate; heavy with E winds.	Firm sand.	Interrupted sandy strip, with dunes in many places, backed by ter- raced hills.	Highway and R.R. easily accessible.
(84) Vicinity of Ch'onjin-ni.	Obstructed.	Strip beaches; average 0.8 mi.	75 to 150 ft.	1 on 25.	Surf moderate; heavy with E winds.	Firm sand.	Narrow sandy strips; several narrow flats ex- tend 1 mi. inland; 2 lakes in S.	Highway and R.R. every- where easily accessible.
(85) Shore N of Ongjin-dan.	Partly obstructed and channeled.	2 mi., inter- rupted by lake outlet.	125 to 150 ft.	1 on 30.	Surf moderate; heavy with E winds.	Firm sand.	Sandy spit backed by large lake in center and hills on N and S.	Highway and R.R. skirt shore, bridge outlet of lake.



FIGURE IV - 57. East coast. Northwest of Kojin-dan (Kyoshin-tan). Beach area (81).

View northward from beach fronting summer resort on narrow spit between Hwajin-p'o (Kashin-bo) lake and sea, with island of Ch'ojindo (Sōshin-tō) on right; compare FIGURE IV-55. Beach is eroding; small sand cliff is temporary feature. Approximate position 38°28'N, 128°26'E; U.S.H.O. chart 3319.

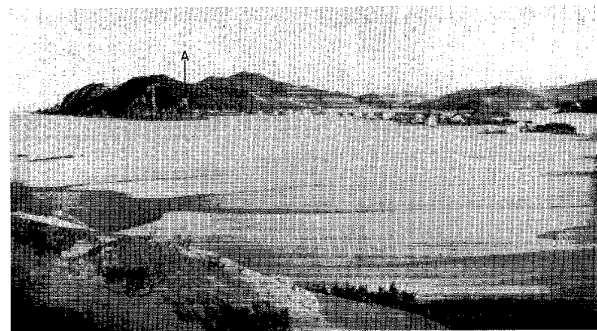


FIGURE IV - 58. East coast. Northwest of Kojin-dan (Kyoshin-tan). Beach area (81).

View southward along beach fronting summer resort on narrow spit between Hwajin-p'o (Kashin-bo) lake (right middleground) and sea. Lake outlet in foreground. Villa marked "A" is viewpoint of FIGURE IV-55 and is also seen in FIGURE IV-59. Approximate position 38°28'N, 128°26'E; U.S.H.O. chart 3319.



FIGURE IV - 59. East coast. Northwest of Kojin-dan (Kyoshin-tan). Beach area (81).

View southeastward from beach fronting summer resort on narrow spit between Hwajin-p'o (Kashin-bo) lake and sea toward bluff terminating beach to southward. Villa marked "A" is viewpoint of FIGURE IV-55 and is also seen in FIGURE IV-58. Approximate position 38°28'N, 128°26'E; U.S.H.O. chart 3319.

K. Ongjin-dan (*Ōshin-tan*) to Tungmyong-ni.

(38° 11'N, 128° 37'E; 37° 42'N, 129° 01'E)

(PLANS 11 to 13; FIGURE IV - 60; U.S.H.O. charts 3319 and 5669)

(1) Coast.

Several rocks lie close to shore near the promontories in this coastal subsector, but the approach is generally clear otherwise. The 10-fathom curve is from $\frac{3}{4}$ mile to $1\frac{1}{4}$ miles off shore, and the 100-fathom curve from 4 to 5 miles. The coast is bordered in most part by narrow sandy beaches and in part by small bluff-to-cliffy promontories. The inland terrain is hilly close to the shore except in the areas immediately adjacent to the stream valleys which are usually cultivated in rice.

1

Between Ongjin-dan (*Ōshin-tan*) and Kisamun-dan (*Kisamon-tan*) there are several sandy beaches (beach area (86), TABLE IV - 11) separated by very small bluff-to-cliffy promontories. Except in areas adjacent to streams, hills rise close to the shore and attain a height of 1,250 to 2,500 feet a few miles inland. Scrub pines, other coniferous trees, and wild grass cover the hills near the shore except along the more gentle slopes where there is some cultivation. The mountain slopes farther inland are wooded with broadleaf and coniferous forests. A railroad and a secondary highway follow close to the shore except in the south-central part of the subdivision where they turn inland to the town of Yangyang (*Jōyō*).

Immediately south of Ongjin-dan (U.S.H.O. chart 5669, inset K) is the small town of Taep'o-ri (*Taibō-ri*), which has minor port facilities at the heads of 2 small coves forming the harbor (Chapter VI).

About $1\frac{1}{4}$ miles south of Ongjin-dan (U.S.H.O. chart 3319), 2 streams break the coast only $\frac{1}{2}$ mile apart. In the stream valleys there are scrub pines, other coniferous trees, and rice paddies.

The largest of the many streams in this subdivision empties into the sea about midway along the stretch. This stream has many winding tributaries which unite before reaching the shore to form one river mouth. Along the tributaries about 4 miles inland the stream valleys are narrow, but there are rice paddies in places along the banks. In a few places the mountains rise abruptly from the stream banks. Near the coast the stream valley is wider and there are areas of wild grass, coniferous trees, including a few scrub pines, and deciduous trees. A few rice paddies are found in this part of the valley.

Sandy stretches extend $1\frac{1}{4}$ miles north and south of this river mouth and form the second longest beach in the area. Immediately inland of the beach the terrain is low with coniferous trees north of the river mouth and scrub pines and wild

grass southward. A small stream breaks the coast on the south side of the base of a tiny promontory at the southern end of the beach and forms an outlet for a small, almost marsh-encircled lake about $\frac{1}{4}$ mile inland. For 2 miles southward of this promontory the shore is bluff to cliffy, with several tiny sandy pockets.

Between this 2-mile stretch and the promontory of Kisamun-dan (*Kisamon-tan*), there is a sandy beach $3\frac{1}{4}$ miles long. Wild grass and scrub pines appear between the beach and low hills rising $\frac{1}{4}$ mile inland, and 2 small lakes lie at the southern end of the beach. Two streams cut this beach. The larger lies $\frac{3}{4}$ mile southward of the north end of the beach and is joined by a small tributary just before it reaches the sea. Rice paddies lie in the valley of these streams and along the banks of the smaller stream which breaks the coast just north of Kisamun-dan. Kisamun-dan is a cliffy promontory 416 feet high and is covered with wild grass.

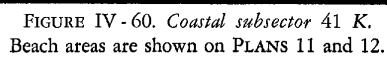
2

Sandy beaches (beach area (87)) border the coast of this subdivision except along small projections which have rocky or bluff shores with off-lying rocks and islets. Low spurs of rolling hills extend to the shore in many places, and the lower slopes are cultivated in rice. Scrub pines, other coniferous trees, a few broadleaf trees, and wild grass also appear on these foothills. In the valleys between the spurs there are rice paddies and scattered scrub pines. About $1\frac{1}{4}$ miles northwestward of Chumunjin, a lake $\frac{3}{4}$ mile long and less than $\frac{1}{2}$ mile wide lies within $\frac{1}{4}$ mile of the shore. Three miles northwestward of this lake there is a slightly smaller lake lying about the same distance from the shore. The longest uninterrupted stretch of beach extends $2\frac{1}{4}$ miles northwestward from the bluff and rocky promontory just north of Chumunjin. The railroad and secondary highway closely parallel the shore throughout the subdivision. Many trails traverse the hilly terrain inland.

3

The coast of this subdivision consists of an interrupted sand beach (beach area (88)), except for $2\frac{1}{4}$ miles at the southeastern end. There are several small bluff-to-cliffy promontories along the coast which are the termination of hill spurs.

The secondary port of Chumunjin (*Chūmonshin*) (Chapter VI) is located in a small cove on the south side of the headland forming the northern extremity of this subdivision (inset on U.S.H.O. chart 3319). A rock reef extends nearly $\frac{1}{2}$ mile south-southeastward from the southern point of the headland. Low spurs of hills, which lie between river valleys, extend to the shore. The hills are forested with scrub pines and other coniferous trees; the valley floors and terraced lower slopes are planted to irrigated rice. A narrow strip of wild grass fringes



the landward edge of most of the beaches. Less than $\frac{1}{4}$ mile from the shore midway along this subdivision, there is a lake $1\frac{1}{4}$ miles long, aligned north-south, which is connected to the sea by a narrow outlet and is fed by a small stream flowing from the hills inland. Three miles southward of this lake there are 4 ponds in a stream valley. The largest of these lies 1 mile inland; it is filled with reeds and is connected to the river in the valley by one of the tributaries. In the next narrow valley southward, there is another lake about $\frac{1}{2}$ mile long which lies less than $\frac{1}{2}$ mile inland and is fed by a small stream.

The inland terrain in this subdivision is composed of low hills covered with coniferous trees and wild grass. Rice paddies

are found in the valleys as far as 8 miles inland. Many roads and trails traverse the hills; close south of Chumunjin the railroad and secondary highway leave the shore and make a detour to pass through the town of Kangnung (*Kōryō*) 3 miles inland. The airfield listed under the name of *Kōryō* (Kangnung) (Chapter XIV) is located 2 miles east of the town and $1\frac{3}{4}$ miles northward of the location shown on PLAN 12. For $2\frac{1}{2}$ miles northwestward from the southeastern extremity of this subdivision, hills covered with wild grass and coniferous trees rise from the shore and attain a height of over 2,000 feet about $3\frac{3}{4}$ miles inland.

(2) Landing beaches.

TABLE IV - 11
LANDING BEACHES OF COASTAL SUBSECTOR 41 K
Reliability GOOD. (PLANS 11 and 12)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(86) S from Taep'o-ri. (PLAN 11).	Scattered small rocks.	Beaches totaling 9.5 mi., interrupted by rocky stretches totaling 3 mi.	125 to 150 ft.	1 on 30.	Surf moderate; heavy with E winds.	Firm sand.	Sandy strips 200 to 1,500 ft. wide, backed by pine-covered and rice-terraced hills; small valleys lead inland S of Chosan-ni.	Highway and R.R. easily accessible except at center, where they are 2 mi. inland behind hills.
(87) NW of Chumunjin. (PLANS 11 and 12).	Generally clear; scattered rocks off center and S end.	Many short strip beaches; average 1 mi.	100 to 125 ft.	1 on 25.	Surf moderate; heavy with E winds.	Firm sand.	Sandy strips, 200 to 600 ft. wide; backed by rice-terraced hills, rising to mountains inland.	Highway and R.R. parallel beaches within 0.5 mi.
(88) SE from Chumunjin. (PLAN 12).	Partly obstructed.	14.2 mi., interrupted by rocky points.	125 to 150 ft.	1 on 30.	Surf moderate; heavy with E winds.	Firm sand.	Alternate hills and small flats; flats have rice fields; hills have terraced rice; lake in center, dunes in SE.	Highway and R.R. wind through hills up to 3 mi. inland; trails and poor roads connect to beach.

L. Tungmyong-ni to Imun-mal (*Rinin-matsu*).

($37^{\circ}42'N$, $129^{\circ}01'E$; $37^{\circ}14'N$, $129^{\circ}21'E$)
(PLAN 13; FIGURE IV - 61; U.S.H.O. chart 3319 and 5669)

(1) Coast.

The approaches to this coastal subsector are deep and clear, the 10-fathom curve being generally between $\frac{1}{2}$ mile and 1 mile off shore, and the 100-fathom curve from $3\frac{1}{2}$ to 7 miles out, except at the southern end where it recedes up to 12 miles or more. A few rocks lie off shore, generally quite close to land.

Most of the coast is composed of a narrow strip of sand, interrupted at places by cliffy promontories and the mouths of streams.

The terrain immediately inland of the coast is hilly close to the shore, except for valleys bordering streams. Rice is cultivated in most of the low areas.

The coastal railroad, shown as under construction on PLAN 13, is reported to be in operation as far south as Samch'ok (Chapter VII, 71, K (6)). Southward from this town it is believed to be still under construction, and is therefore not mentioned in the detailed coastal description.

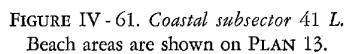
1

This 10-mile stretch (U.S.H.O. chart 3319) is composed of a long sand beach flanked by wide headlands with steep or rocky shores. The coastal railroad and secondary highway parallel the coast from a few feet to $1\frac{3}{4}$ miles inland. Just southward of Tungmyong-ni, which lies on the north side of the northern headland, begins a narrow sandy strip (beach area

(89), TABLE IV - 12) backed immediately inland by hills covered with wild grass and coniferous trees. These hills attain a height of 610 feet $\frac{1}{2}$ mile inland. The sandy strip continues southeastward for 1 mile to the mouth of a small stream where is the village of Chongdongjin-ni, which is backed by a small stream valley cultivated in rice. A coastal trail connects Tungmyong-ni with Chongdongjin-ni to the southeast.

Between Chongdongjin-ni and Kumjin-ni the coast is steep, with hills rising abruptly from the shore. These hills are covered with wild grass and a few coniferous trees, and reach a height of 975 feet $1\frac{1}{2}$ miles inland. Two villages lie in sandy pockets along the stretch and are connected with Chongdongjin-ni and Kumjin-ni by a trail. A few trails run inland in this area.

Kumjin-ni is at the northwest end of a sandy beach extending about 5 miles southeastward (beach area (90)). Except in the areas adjacent to the two small rivers which cut the beach, hills rise fairly steeply immediately behind the beach and attain a height of over 700 feet only $\frac{1}{2}$ mile inland. These hills near the shore are covered with wild grass and a few coniferous trees; the higher slopes inland bear coniferous forests. The larger of the two rivers mentioned above empties into the sea $\frac{3}{4}$ mile south of Kumjin-ni, through a small lagoon which also has two creeks emptying into it. Backing the beach here there is a 1-mile-wide valley which divides $1\frac{1}{4}$ miles inland along the two streams which meet to form the river. This valley is cultivated in rice except along the banks of the northern stream. There are many villages and settlements in these val-



leys, particularly in the valley of the southern stream, where there are scattered deciduous trees, wild grass, and small gravel plains. Several trails traverse this valley.

The second of the 2 small rivers flows through a valley cultivated in rice and cuts the shore at the southeast end of the beach. A few coniferous trees are found in this valley near small settlements at the foot of the hills. The railroad and secondary highway closely parallel the coast between these 2 rivers.

The shore of the southern headland is mainly rocky, with hills covered in wild grass and scrub pines rising immediately inland. The hills reach a height of over 900 feet about 1½ miles inland. Near the southern end of the headland there is a short stretch of sandy beach (beach area (91)).

2

The shore between Mukhojin-ni and Pi-mal (*Hi-matsu*) is predominantly sandy with short rocky or cliffy interruptions. The secondary highway follows the coast from less than ¼ mile to 1½ miles inland. Several unimproved roads and trails traverse the terrain inland.

The fishing port of Mukhojin-ni (*Bokukoshin-ri*; U.S.H.O. chart 5669, inset B) is located on the north shore of Mukho-hang (*Bokuko-kō*), a bay sheltered on the north by the headland which terminates subdivision 1. The village is fronted by a small artificial harbor (Chapter VI), south of which a sandy beach (beach area (92)), interrupted by a rocky point and several stream mouths, extends along the western bayshore.

The southern entrance point of Mukho-hang begins a 1½-mile stretch of mainly rocky coast (U.S.H.O. chart 3319), south of which is a 2-mile stretch of sandy beach flanking the mouth of the river Chon-ch'on (beach area (93)). The river valley is about 1 mile wide near the shore and becomes narrower inland; it is intensively cultivated in rice and is wooded in both broadleaf and coniferous trees. The banks of the river are bordered by small sand-and-gravel plains in most places where the banks are not bluff, and several villages are located near the foothills enclosing the valleys.

The beach on the south side of the Chon-ch'on river mouth is followed southeastward by 3½ miles of mainly rocky coast, with only one pocket beach of any appreciable size (beach area (94)). The southern part of this stretch is a broad cliffy headland of which the most conspicuous point is Kwangjin-dan (*Kōshin-tan*), backed by a 450-foot summit. The cliffs end abruptly at the mouth of the river Osip-ch'on (*Gojū-sen*), which flows into the small artificial harbor fronting the village of Chongha-ri (*Teika-ri*; U.S.H.O. chart 5669, inset G) (Chapter VI, 63). The valley of the Osip-ch'on is narrow, with some wild grass and cultivation of rice. Small sand-and-gravel plains border the river banks in most places for several miles inland. As the valley grows narrower the banks become cliffy in places. The town of Samch'ok is located on the north bank of the river about 1¼ miles inland.

A short rocky stretch south of the harbor of Chongha-ri is followed southeastward by a narrow sand beach 4½ miles long (beach area (95)), which ends at the base of Pi-mal (*Hi-matsu*; U.S.H.O. chart 3319), the cliff-edged promontory terminating this subdivision. Hills covered with wild grass back

this whole stretch. The spurs of hills extending toward the valley of a stream in the southern part of the stretch are much lower than those in the northern part. This stream empties into the sea 1 mile northward of Pi-mal and has several tributaries. Several villages lie on the banks of the stream. The stream valley is sparsely cultivated except along a short tributary flowing southeastward near the shore. Very narrow sand-and-gravel plains border the stream, and there is a small reed-filled marsh just inland of its mouth.

3

The shore between Pi-mal (*Hi-matsu*) and Imun-mal (*Rin-in-matsu*) is predominantly cliffy and somewhat rockbound. However, there are several small beaches, and one over a mile long nearly halfway between the two points.

South of Pi-mal, which is a prominent rocky headland 272 feet high, with a large island rock at its extremity, the coast is mostly cliffy and jagged for a distance of almost 4 miles, as far as the village of Maewon-ni. A succession of uneven hills lies immediately back of the cliffs. Their higher slopes are uncultivated and bear several groups of coniferous trees. The lower slopes situated between the three conspicuous and evenly distanced high points are cultivated. A small river valley, intensively cultivated, and bounded by higher hills, lies back of these hills; through this valley runs the secondary highway.

Southeastward from Maewon-ni a sand beach (beach area (96)) stretches as far as the village of Ch'ogong-ni. The beach terminates against the base of the prominent rocky headland Sail-tan (*Shajitsu-tan*). Leading inland from the northern end of the beach is a cultivated valley. This valley is forked, one prong leading straight back into a group of hills, the other paralleling the beach for some distance before turning inland. A road follows this valley, which is separated from the middle and southern parts of the beach by a row of low hills.

Southward from Sail-tan (*Shajitsu-tan*) the coast is rocky, with several cliffy headlands jutting out, thus forming open coves. Of the 3 main coves between Sail-tan and Kalsan-mal (*Katsusan-matsu*), the southeasternmost is rockbound, but the other two have pocket beaches at their heads (beach area (97)). The northwestern of these two beaches is at the mouth of a cultivated valley leading far inland between high hills; behind the other is a small cultivated area enclosed by low hills.

Southward from Kalsan-mal (*Katsusan-matsu*) to the end of the subsector the coast is mainly rugged and rockbound, but southeast from the village of Kaltam-ni there are 3 short beaches separated by rocky stretches (beach area (98)). For one mile north of Imun-mal (*Rinin-matsu*) there is a chain of large rocks jutting out from the base of a small group of hills with unusually steep slopes. Several similar masses of rocks are noticeable at different levels up these slopes almost to the top.

Behind the coastline there is an uneven line of hills reaching a peak over 1,200 feet high about midway between Kalsan-mal and Imun-mal ⅔ mile inland from Kaltam-ni beach. The slopes facing the sea are grassy. Those facing an inland valley are sparsely studded with coniferous trees. The secondary highway runs through this valley. From Kaltam-ni trails run northward and southward to join the highway.

(2) Landing beaches.

TABLE IV - 12
LANDING BEACHES OF COASTAL SUBSECTOR 41 L
Reliability GOOD. (PLAN 13)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(89) SE from Tungmyong-ni.	Clear; nearshore flat.	2.2 mi.	125 to 150 ft.	1 on 30.	Surf moderate; heavy with E winds.	Firm sand.	Dune belt 0.5 mi. wide, backed by valley in rice in N, by hills in S.	Highway and R.R. 1.3 mi. inland; accessible by trails over dunes.
(90) Vicinity of Chosan-ni.	Partly obstructed.	5.2 mi., interrupted by river mouth.	125 to 150 ft.	1 on 30.	Surf moderate; heavy with E winds.	Firm sand; soft near inlet.	Inlet and small river flat in N; 0.5-mile-wide sandy strip with dunes in S; mountains inland.	Highway and R.R. everywhere accessible.
(91) NE of Mukhojin-ni.	Obstructed.	0.4 mi.	75 to 100 ft.	1 on 20.	Surf moderate; heavy with E winds.	Firm sand.	Steep slopes rising to hills.	Trails over hills.
(92) Mukho-hang (Bokuko-kō)	Generally clear; rock on S.	1.5 mi., interrupted by many small streams.	100 to 125 ft.	1 on 30.	Surf moderate; breakwater on N.	Firm sand; soft near stream mouths.	Flat sand strip 500 to 600 ft. wide, crossed by many small streams; backed by hills and small river flats.	Highway and R.R. within 1 mi.
(93) NW of Ch'uam-ni.	Clear.	2.2 mi., interrupted by stream.	100 to 125 ft.	1 on 30.	Surf moderate; heavy with E winds.	Firm sand; soft near stream.	Small river flat enclosed by hills.	Highway and R.R. within 1 mi.
(94) SE of Ch'uam-ni.	Nearshore shoal.	0.4 mi.	50 to 75 ft.	1 on 20.	Surf moderate; heavy with E winds.	Firm sand.	Backed and flanked by hills.	Highway and R.R. within 0.7 mi.; accessible by trails over hills.
(95) SE of Chongha-ri.	Generally clear; rock on S.	4.5 mi., interrupted by stream near SE end.	125 to 150 ft.	1 on 30.	Surf moderate; heavy with E winds; drift to N.	Firm sand.	Narrow discontinuous sandy strip backed by steep hills.	Highway* from Samch'ok southward skirts beach.
(96) NW of Sail-tan (Shajitsu-tan)	Partly obstructed.	1.6 mi.	100 to 125 ft.	1 on 25.	Surf moderate; heavy with NE wind.	Firm sand.	Flat sand strip 600 ft. wide, backed by rough hills with steep slopes.	Highway* skirts shore.
(97) S of Sail-tan (Shajitsu-tan)	Obstructed.	2 pocket beaches; 0.1 mi.	50 to 75 ft.	1 on 15.	Surf light.	Sand and pebbles.	Steep slopes rising to hills.	Highway* skirts W beach; trail accessible from E beach.
(98) Vicinity of Imun-mal (Rinin-matsu)	Obstructed.	Strip beaches; average 0.5 mi.	25 to 50 ft.	1 on 15 to 1 on 10.	Surf moderate; heavy with E winds.	Imwonjin beach sand; remainder pebbles.	Backed directly by steep slopes.	Steep trails to highway* 1 to 2 mi. inland, except at Imwonjin, where it comes closer to shore.

* Southward from Samch'ok the coastal railroad paralleling the secondary highway is reported to be still under construction (CHAPTER VII, 71, K (6)).

between this beach and the headland surmounted by Ponghwa-ch'i (*Hōka-ji*), a 350-foot peak. This is the first of a series of 3 rocky headlands with short beaches between them (beach area (99)). The center headland is fringed with numerous island rocks close inshore, and a few larger ones farther out.

From Pugu-ri, a village immediately south of the third of these headlands, a beach with short rocky interruptions (beach area (99)) extends about 3½ miles to the base of Yongch'u-gap (*Ryūshū-zaki*, Yonchu Kapu), the headland terminating this subdivision. This strip of beach is wide at Pugu-ri, narrow at T'oeh'ch'on-dong with a number of scattered rocks close-in, and again wide, with sand dunes, at Tokch'on-ni.

Yongch'u-gap is a hooked headland with its extremity pointing southward; its entire shoreline is rockbound.

From Hosan-ni to Pugu-ri the inland terrain is hilly except for the areas immediately back of the two beaches adjoining these villages, where there are valleys leading to the interior. These two valleys are cultivated, as are the lower slopes and the low saddles between hills back of the narrower beaches along the coast. Coniferous trees are numerous immediately north of Pugu-ri. The secondary highway zigzags along the hills, approaching the coast at a village south of Ponghwa-ch'i (*Hōka-ji*). Higher hills are beyond.

From Pugu-ri to Yongch'u-gap the hill slopes are first close to the shore where the beach narrows, then farther inland, leaving a low coastal area. The north side of Yongch'u-gap is again hilly close to the shore. The slopes are not cultivated, but the flatlands back of the beach are. From Pugu-ri a trail leads up the valley inland. The highway passes immediately behind the narrow stretch of beach, turning inland at T'oeh'ch'on-dong. A trail continues southeastward behind the southernmost beaches.

3

From Yongch'u-gap (*Ryūshū-zaki*, Yonchu Kapu) south to Toksin-ni the coast (U.S.H.O. chart 3241) is alternately beaches and rocky bluffs, with no protected bays except that of Chukpyon-man (*Chikuben-wan*; inset on U.S.H.O. chart 3241), formed by the hooked projection of Yongch'u-gap, which gives partial shelter.

The southern end of Chukpyon-man is delimited by a point jutting out to sea, with rocks at its tip. There is a beach around the bay shore (beach area (100)). The village of Chukpyon-ni is near the protected northern shore and that of Pongpy'ong-ni faces the sea toward the southern end. For the next 1½ miles south there is an open bight with a beach along its shore (beach area (100)) and the village of Onyang-ni at its head. Two reef-fringed bluffs and a rocky point, with short beaches between them, mark the southern limit of the bay. The broad headland formed by the bluffs and point is known as Sujan-mal (*Suiden-matsu*).

South of Sujan-mal the coast alternates between strips of beach and rocks for about a mile, to the mouth of a stream. South of the stream, a 1½-mile beach (beach area (101)) flanks the mouth of the river Wangp'i-ch'on; north of the river, the beach is backed by a lagoon. For the next 2 miles southward, as far as the village of Chinbong-ni, the coast is regular

but mainly steep, with only one good stretch of beach (beach area (102)). South from Chinbong-ni an almost continuous sand beach (beach area (103)) extends 2½ miles to the village of Toksin-ni, which forms the southern limit of this subdivision.

An island rock, *Kūjemi-shō*, lies 1 mile out to sea opposite Toksin-ni.

Back of several of the beaches in this subdivision, there are small areas of flat land backed closely by slopes of hills. The flats and valleys are cultivated, but the slopes are uncultivated. In several places coniferous trees are to be found; there are some on the wide flat area back of the beach immediately north of the river Wangp'i-ch'on. A trail follows the coast closely, but the secondary highway remains some distance inland, except at the river mouth area, and is accessible only by trails; it returns to the coast at Toksin-ni.

4

From Toksin-ni to Kisong-ni, about 6 miles south-southeastward, the coast is bordered by a long stretch of open beach (beach area (103)), interrupted by a rockbound bluff at Mangyang-ni and by occasional rocky points; much of this beach has its approach obstructed by island rocks or clusters of rocks lying close off shore. A stream reaches the sea just south of Kisong-ni, and the beach ends against a hilly bluff immediately south of the stream. Two miles farther south is the headland of Hwamo-mal (*Kwamo-matsu*), east of Kusan-ni village. The intervening stretch is a sandy beach (beach area (103)) with 2 rocky interruptions and some offshore rocks. Hwamo-mal is a low point and is bordered by a beach; however, the whole headland has, on both its sides, numerous offshore rocks, and several rocky islands at its extremity.

South of Hwamo-mal a sandy beach (beach area (104)) lines the shore of an open bight from Kusan-ni village to the mouth of the river Namdae-ch'on; a small stream mouth divides the beach. From the river mouth a beach (beach area (105)) extends 2½ miles southward, beyond which distance a bluff builds up for a mile to become Pingjang-mal (*Hyōshō-matsu*, Pinchan Matsu), the point which terminates this subsector. This last mile before the point is rocky, but is bordered by a pebbly beach. There are several offshore rocks along this stretch.

The northern part of this subdivision, from Toksin-ni to Mangyang-ni, is backed by a large mass of hills, with Hyonjong-san attaining over 1,300 feet less than a mile inland. The secondary highway is directly back of the beach. The slopes of the mountain are uncultivated.

South of Mangyang-ni the highway leaves the coast, only meeting it again at Kusan-ni. Between the coast and the highway there is a line of hills with uncultivated slopes.

A lowland area surrounds the mouth of the river Namdae-ch'on and the stream ½ mile north of it. The lowland is cultivated up the valleys. Behind the strip of coast from the river mouth to the end of the subsector, there is a group of hills reaching a height of almost 600 feet. These hills are similar in appearance to those to the north. The highway turns inland along the north bank of the Namdae-ch'on to the town of P'yonghae-ri, then south again.

(2) Landing beaches.

TABLE IV - 13

LANDING BEACHES OF COASTAL SUBSECTOR 41 M
Reliability GOOD. (PLANS 13 and 14)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(99) Vicinity of Ponghwa-ch'i (Hōka-jī). (PLAN 13).	Partly obstructed.	Strip beaches; average 0.7 mi.	50 to 75 ft.	1 on 20.	Surf moderate; heavy with E winds.	Sand; some pebbles.	Sandy strip, max. width 600 ft., backed by hill slopes.	Highway* winds 0.5 mi. inland through hills behind N beaches, closely backs beach SE of Pugu-ri, then turns inland.
(100) Chukpyon-man and shore to S. (PLAN 13).	Partly obstructed.	Strip beaches; 0.3 to 2.0 mi.	75 to 100 ft.	1 on 20.	Surf moderate; heavy with E winds.	Sand and pebbles.	Backed directly by steep slopes cut by ravines.	Highway* 2 mi. inland; accessible by trails over hills.
(101) Vicinity of Wangp'i-ch'on mouth. (PLAN 14).	Generally clear.	1.6 mi., interrupted by river mouth and rocky point.	100 to 125 ft.	1 on 25.	Surf moderate; heavy with E winds.	Sand.	Backed in N by sandspit and lagoon; in S by steep hill slopes; hills everywhere within 1 mi.	Highway* within 1 mi. of N part of beach.
(102) N of Chimbong-ni. (PLAN 14).	Obstructed.	0.4 mi.	50 to 75 ft.	1 on 20.	Surf moderate; heavy with E winds.	Firm sand; some pebbles.	Steep slopes rising to hills.	Trails over hills to highway* 2 mi. inland.
(103) Chimbong-ni to Kusan-ni. (PLAN 14).	Generally obstructed.	12 mi., interrupted by many small rocky points.	75 to 100 ft.	1 on 20.	Surf moderate; heavy with E winds.	Firm sand.	Sandy strip 100 to 400 ft. wide, backed by sparsely vegetated hills.	Highway* 2 mi. inland in N, skirts shore in N center, 1 mi. inland in S.
(104) S from Kusan-ni. (PLAN 14).	Obstructed in N; otherwise clear but shoal.	1.8 mi., interrupted by small stream.	100 to 125 ft.	1 on 25.	Surf moderate; heavy with E winds.	Firm sand.	0.8-mi.-wide flat, sandy at shore with some dunes; rice fields on inner margin; flanked and backed by hills on N and W, by stream on S.	Highway* 0.5 mi. inland; accessible by trails.
(105) Vicinity of Koil-li. (PLAN 14).	Obstructed.	4.3 mi., interrupted by many rocky points.	Average 50 to 75 ft.	1 on 15.	Surf moderate; local protection from rocky points.	Sand and pebbles.	Backed by steep hill slopes.	Highway* 1 to 2 mi. inland; accessible by steep trails only.

* The coastal railroad paralleling the secondary highway is believed to be still under construction throughout this subsector (CHAPTER VII, 71, K (6)).

N. Pingjang-mal (Hyōshō-matsu) to Ch'ilp'o-dong.

(36°41'N, 129°28'E; 36°08'N, 129°24'E)

(PLAN 14; FIGURE IV - 63; U.S.H.O. charts 3241 and 5669).

(1) Coast.

Bottom gradients bordering this coastal subsector are fairly steep, the 100-fathom curve varying from 7 to 11 miles off shore, and the 10-fathom line from about ½ mile to 2 miles. Mud and sand form the bottom sediment. There are no off-lying islands, and the approaches are clear except for the banks to the northeast mentioned in the preceding subsector.

This subsector has two major bights which only slightly indent the coastline. The shore of the northern bight is generally sandy; pocket beaches of sand and gravel appear along the southern bight. A long cliffy stretch lies in the central subdivision of the subsector; a narrow band of rocks and shoals fronts this stretch. Several narrow valleys, generally having small alluvial patches at their mouths, lead inland. A secondary highway follows the coast throughout, immediately back of the beaches in some places, in others 2 or 3 miles inland, with numerous trails leading to it from the shore. The corresponding section of the coastal railroad is believed to be still under construction, and is therefore not mentioned in the detailed description following.

The inland terrain consists principally of rugged upland which is covered with grass, scrub growths, and scattered clumps of coniferous trees. Most of these steep inland hills attain heights of between 500 and 1,000 feet. The numerous narrow stream valleys have steep hills rising abruptly from the valley bottoms. The only cultivated areas lie along these valleys.

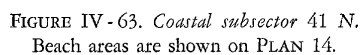
1

Close off Pingjang-mal (Hyōshō-matsu, Pinchan Matsu), which is the northeastern entrance point of Hubo-hang (Kōbo-kō; U.S.H.O. chart 5669), lies an islet, Kwan-am (Kan Gan). Hills rise from the water's edge all around the islet and attain a height of about 100 feet.

Pingjang-mal is a cliffy point backed by sharply rising hills, reaching a height of 600 feet about 1½ miles inland. These hills are uncultivated and are covered with scrub growth and grass. Several rocks above water lie off the southeastern extremity of the point.

Hubo-hang (Kōbo-kō) is protected by breakwaters; the inner harbor is quayed throughout and is used as a minor port or landing place (Chapter VI, 63).

The shore south of Hubo-hang (U.S.H.O. chart 3241) is bordered by a sand-and-pebble beach (beach area (106), TABLE IV - 14) as far as Pyonggok-tong, a small town 6 miles southward. An extremely narrow strip of ground separates the



beach from the hills, which rise abruptly, reaching a height of 600 feet about ½ mile behind the shore. Several small streams cut these hills, and the valleys through which they flow are planted to irrigated rice. The secondary highway runs just behind the beach along this whole stretch. Along the remaining 2½ miles of coast in this subdivision, the narrow coastal strip merges with an alluvial plain formed by the meeting of 3 stream valleys. A sandy beach (beach area (107)) borders the whole stretch. The plain extends inland about 3 miles and is intensively cultivated in irrigated rice. There is little cultivation on the hills, but they are sparsely covered with scattered clumps of coniferous trees.

2

The shore of this subdivision is extremely rocky and cliffy. A few small scattered sand beaches lie in the heads of minor indentations (beach area (108)). In the north-central part of the subdivision is a headland consisting of two hilly, rock-fringed promontories which enclose a small harbor fronting the village of Ch'uksan-dong (*Chūsān-dō*). The harbor, known as Ch'uksan-p'o (*Chūsān-bo*, Chusan Po; inset on U.S.H.O. chart 3241), is protected by breakwaters; at its head is a low sandy shore backed by swampy land.

This rugged coast is backed by sharply rising hills which attain heights of approximately 800 feet about ½ mile inland. Ponghwa-san is the peak of this range of hills and is over 900 feet high. The hills are covered with scrub growth and grass and a few scattered coniferous trees. The only cultivated area is in a narrow valley which is located directly inland of Ch'uksan-dong. Conspicuous dikes are found along the southern outlet of this valley, south of Ch'uksan-dong.

3

The shore of this subdivision is composed of a series of short rocky promontories separated by small sandy coves. The village

of Ch'angp'o-dong (Ch'ang'ro-dong on PLAN 14) lies at the northern extremity of the stretch, and the shore from this village southwestward to Kanggu-dong (*Kōkō-dō*), a distance of 3½ miles, has 3 short beaches in its northern part (beach area (108)). It is backed by a narrow lowland strip and farther inland by gradually rising hills which are covered with scrub growth.

The village of Kanggu-dong (*Kōkō-dō*) lies on the north bank of the mouth of the Osip-ch'on (*Goju-sen*); the river mouth is protected by breakwaters, forming a small harbor (Chapter VI, 63; U.S.H.O. chart 5669, inset H). Upstream, the river valley is under intensive cultivation in irrigated rice and is bordered on either side by sharply rising hills.

Southward of Kanggu-dong, the coast for 9 miles is only very slightly indented (U.S.H.O. chart 3241); sandy beaches along the shores of gently curving bights (beach areas (109) and (110)) alternate with rocky, reef-fringed stretches. Some cultivated valleys are found along streams emptying into the bights. The secondary highway closely follows the shoreline for the first 6 miles southward.

The only major indentation in this subdivision is Ch'ongha-man (*Seika-wan*; Wolp'o-man on PLAN 14), which opens immediately south of the 9-mile stretch just described. An alluvial valley extends inland for approximately 5 miles from the sandy bayhead (beach area (111)), and is under intensive cultivation in rice paddies.

South of Ch'ongha-man the coast is mainly rocky and reef-fringed, with several off-lying island rocks and only a few short stretches of sand-and-pebble beach (beach area (112)), as far as the village of Ch'ilp'o-dong which is the southern limit of this subsector. Here a stream reaches the sea, and its narrow valley opens out into a small lowland pocket fronted by a sandy beach. An unimproved road runs inland from Ch'ilp'o-dong to join the secondary highway at Hunghae.

(2) Landing beaches.

TABLE IV - 14

LANDING BEACHES OF COASTAL SUBSECTOR 41 N
Reliability GOOD. (PLAN 14)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(106) N from Pyonggok-tong.	Generally obstructed; many nearshore rocks.	5.6 mi., interrupted by rocks.	25 to 50 ft.	1 on 10.	Surf moderate; heavy with E winds.	Sand and pebbles; some coarse pebbly stretches.	Steep hill slopes.	Highway* skirts shore.
(107) S from Pyonggok-tong.	Obstructed on N; otherwise clear.	2.6 mi.	150 to 175 ft.	1 on 30.	Surf moderate; heavy with E winds.	Firm sand; soft near river mouth at S end.	Backed in center by lagoon; rice symbol on Plan 14 outlines flat set in mountains.	Highway* adjoins beach in N, quarters inland to S.
(108) E and NE of Yongdok.	Partly obstructed.	Pocket beaches; average 0.2 mi.	50 to 75 ft.	1 on 20.	Surf moderate to light.	Firm sand; some pebbles.	Backed by mountains.	Highway* accessible only by trails over rough mountains.
(109) N from Changsa-dong.	Generally obstructed.	2 strip beaches; 1.7 and 0.6 mi.	50 to 75 ft.	1 on 20.	Surf moderate; heavy with E winds.	Firm sand.	Backed by hills except for small valley in rice at Changsa-dong.	Highway* parallels shore.
(110) S from Puyong-dong.	S beach clear; N clear, but with flat bottom slope.	N beach 2 mi.; S beach 0.5 mi.	100 to 150 ft.	1 on 30.	Surf moderate; heavy with E winds.	Firm sand.	Sand flats 0.5 mi. wide; some low sand hills; backed by rapidly narrowing valleys.	Highway* backs N beach; quarters inland to S.
(111) Ch'ongha-man (Walp'o-man).	Clear, but with flat bottom slope.	1.3 mi.	150 to 175 ft.	1 on 30.	Surf moderate; heavy with E winds.	Firm sand.	Narrow sandy strip backed by valley in rice.	Highway* 2 mi. inland; accessible by trails across riceland.
(112) Vicinity of Chodo-dong.	Obstructed.	Pocket beaches; average 0.2 mi.	25 to 50 ft.	1 on 10.	Surf moderate; heavy with E winds.	Sand and pebbles.	Steep mountain slopes.	Unimproved road leads inland from S beach; other beaches isolated except for trails over rough mountains.

* The coastal railroad paralleling the secondary highway is believed to be still under construction throughout this subsector (CHAPTER VII, 71, K (6)).

O. Ch'ilp'o-dong to Tangsa-ri.

(36°08'N, 129°24'E; 35°35'N, 129°27'E)

(PLANS 14 and 15; FIGURE IV - 64; U.S.H.O. charts 3241 and 5669)

(1) Coast.

Bottom gradients along this coastal subsector are somewhat irregular. The 10-fathom curve is generally from 1/2 to 1 mile off shore along the less indented parts of the coast. The 100-fathom curve is from 5 to 11 miles off the central part of the subsector, farther out off the northern and southern ends.

The coast is much broken, headlands and bluffs alternating with beaches, except at the head of Yongil-man (*Geijitsu-wan*) (FIGURE IV - 65), where lies a long beach. The southeastern shore of this bay is formed by the northwest side of the most prominent feature of this subsector, a large hilly peninsula, the shores of which are similar to the remainder of the rugged coastline. There are numerous offshore island rocks, both close-in and some distance out.

The coast is backed by uncultivated hilly ground, except at the head of Yongil-man. The hills are uneven and broken. The peninsula mentioned above consists largely of hills which are the northward continuation of a chain of hills parallel to the coast. A few streams run seaward through small cultivated valleys. Most inhabited localities are close to the beaches. The secondary highway is remote from the coast throughout the subsector, except where it approaches the head of Yongil-man to pass through the port of P'ohang-dong (*Hokō-dō*); the railroad following the same route is known to be in operation southward from P'ohang-dong, but north of this port it is believed to be still under construction (Chapter VII, 71, K (6)).

1

Close southward of Ch'ilp'o-dong begins a beach (beach area (113), TABLE IV - 15) which extends southeastward, and around the extremity of a large promontory (U.S.H.O. chart 5669, inset A), to Chukchon-dong. The north end of the beach is backed by a narrow river valley which widens a few miles inland in the vicinity of the small town of Hunghae. From this valley southeastward to Yonghan-dong, the beach is backed by grassy dunes; southwest from Yonghan-dong, it is backed by wooded hills and fronted by rocks. A cliffy projection separates this beach from a very narrow strip beach (beach area (113)), in places backed by cliffs and fronted by rocks, which continues along the northwest shore of Yongil-man (*Geijitsu-*

wan), terminating at the entrance to the river mouth which forms the harbor of P'ohang-dong (*Hokō-dō*; U.S.H.O. chart 5669, inset D) (Chapter VI). South of the harbor entrance begins the long beach across the head of Yongil-man which is described in detail as beach area (114).

The southeast shore of Yongil-man, formed by the northwest coast of the peninsula which ends in Changgi-gap (*Chōki-kō*; Changyong-gap on PLAN 14), is steep and reef-fringed. The hills are fronted by alternating stretches of rocky shore and narrow beaches (beach area (115)) (FIGURE IV - 66). No cultivation is indicated.

2

The east coast of the peninsula terminating in Changgi-gap is formed by a line of low hills; the highest point on the peninsula is under 800 feet. The uneven slopes facing the open sea reach gently to the water's edge in many places. They form a line of low rocky points and bluffs which separate many coves. Short stretches of beach, many of them interrupted by rocks, lie at the heads of the larger coves (beach area (115)), and other narrow stretches of beach, commonly fronted by reefs, are found along some of the promontories. Hills rise immediately behind most of these beaches, and cultivation is found only in a few very small valleys. This type of coast continues to the end of the subdivision (U.S.H.O. chart 3241).

There are partially sheltered bays at Kuryongp'o-ri (*Kyūryū-bo-ri*), Tacjin-ni, and Yangp'o-ri (*Kanbo-ri*). The first and third of these are protected by breakwaters (U.S.H.O. chart 5669, insets C and E), and are described as secondary ports in Chapter VI.

3

The stretch of coast from Taebon-ni, where the river Taejong-ch'on (*Daisō-sen*) reaches the sea, to Tangsa-ri, the southern limit of this subsector, is for the most part less jagged than that to the north, except for the last 3 miles which again form a broken rocky coastline. The whole stretch alternates from rocky bluffs to beaches (beach area (116)), and there are numerous offshore rocks (U.S.H.O. chart 3241).

The same chain of hills, which forms the peninsula to the north, follows the coast. The slopes are covered with sparse trees and brush. Small, cultivated stream valleys are more numerous than farther north, and most of the beaches are partly backed by such valleys.

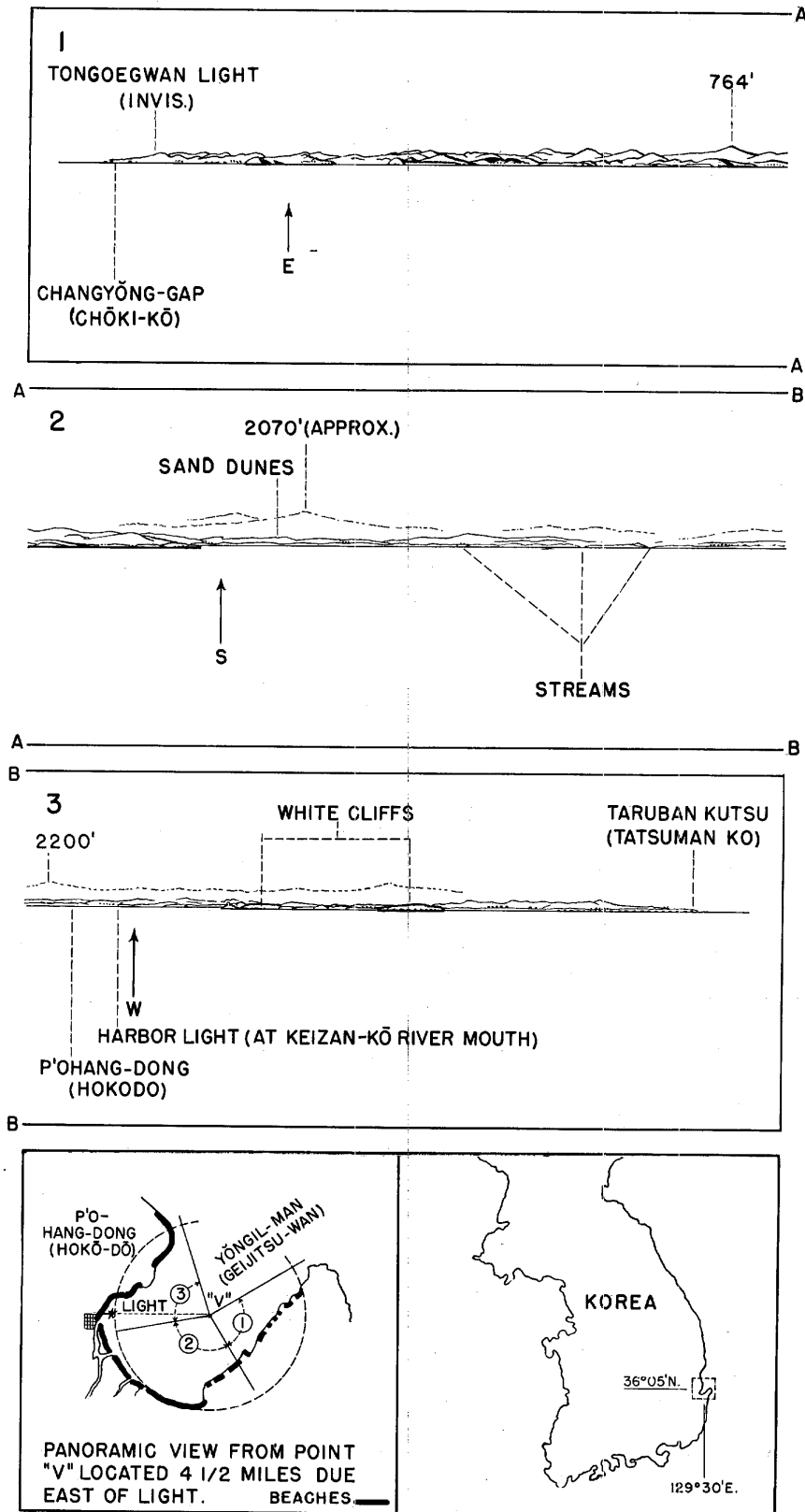


FIGURE IV-65. East coast, Yongil-man (Gaijitsu-wan). Beach areas (113) to (115). Panoramic coastal sketch. Names other than those appearing on PLAN 14 are from U.S.H.O. chart 5669 (inset A). Approximate position of harbor light, 36°03'N, 129°23'E.

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COASTS AND LANDING BEACHES

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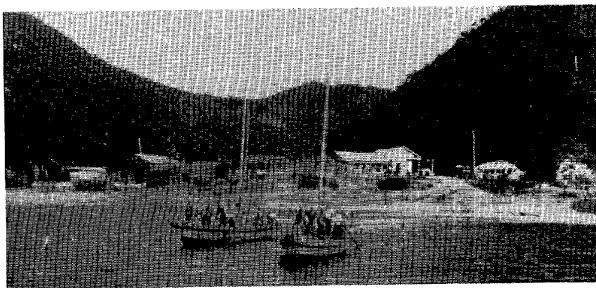
(2) Landing beaches.

(a) General.

TABLE IV - 15

LANDING BEACHES OF COASTAL SUBSECTOR 41 O
Reliability GOOD. (PLANS 14 and 15)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(113) Vicinity of Yonghan-dong and Hwanho-dong. (PLAN 14).	Obstructed; bottom slope flat.	About 7 mi., with rocky interruptions.	125 to 150 ft. on N; 50 to 75 ft. on S.	1 on 30 on N; 1 on 15 on S.	Surf moderate; some protection on S.	Firm sand; some pebbly stretches in S.	Backed by hills; some sand dunes in N, some stretches of cliff in S.	Trails connect over hills to highway and R.R. (under construction).
(114) SW shore of Yongil-man. (PLANS 14 and 15; FIGS. IV - 65 and IV - 67 to IV - 69) (See also (b) below.)	Clear; hills command entrance 6 mi. wide.	6.7 mi., interrupted by streams.	200 ft.	1 on 30.	Surf light; heavy with NE winds.	Firm sand.	NW part of beach is on island cut off by divided river mouth; beach is backed by sand dunes, fading inland into valley flat in rice; valley flat disappears 5 mi. inland.	Highway and R.R. to Pusan turn inland from N end of beach.
(115) Peninsula SE of Yongil-man. (PLANS 14 and 15).	Obstructed; many rocks and reefs.	Strip and pocket beaches; average 0.2 mi.	75 to 100 ft.	1 on 20.	Surf moderate; some protection on NW.	Sand and pebbles.	Steep slopes or narrow ravines of mountainous peninsula.	Improved road leads W from Kuryongp'o-ri; other beaches isolated except for trails over rough country.
(116) Taejin-ni to Pango-ri. (PLAN 15).	Generally obstructed; bottom slope flat.	Pocket beaches; average 0.6 mi.	75 to 100 ft.	1 on 20.	Surf moderate; heavy with E winds.	Sand; some sand and pebbles.	Backed by steep hill slopes within 1,000 ft.	Improved roads at S and at Kamp'o-ri; elsewhere, trails through ravines and over hills to highway and R.R. 5 to 18 mi. inland.

FIGURE IV - 66. East coast. Yongil-man (*Geijitsu-wan*).
Beach area (115).

Small beach on southeast shore of Yongil-man, exact location not known. 1936. U.S.H.O. chart 5669 (inset A).

(b) Southwest shore of Yongil-man (*Geijitsu-wan*),
beach area (114). Reliability FAIR. (PLANS 14 and 15)

1. LOCATION AND EXTENT. An interrupted sand beach extends for 6.7 miles along the southwest shore of Yongil-man (*Geijitsu-wan*). The approximate limits of the beach are $36^{\circ}00'N$, $129^{\circ}28'E$, and $36^{\circ}03'N$, $129^{\circ}23'E$. The beach is at the head of the only large bay on the east coast of Korea south of Yonghung-man (*Eikō-wan*) ($39^{\circ}10'N$). Also, the beach fronts the largest area of flat land along this part of the coast, and gives access to the east coast railroad and secondary highway. Important landmarks for near approach are the 2 breakwaters at the northwest end of the beach (FIGURES IV - 67 to IV - 69; the northern one showed a light from a square iron latticework structure 30 feet high on the outer end of the breakwater.

2. SEA APPROACH. The approach to the 30-foot depth is channeled by the sides of the rectangular Yongil-man, so that entry is from the northeast. The 30-foot depth line roughly parallels the beach at a distance of about 3,000 feet, increasing to a maximum of about 5,000 feet off the northwestern part of the beach. The 18-foot line is also roughly parallel to the beach; it lies 1,700 feet off the northwest end of the beach, and 1,400 feet off the center and the southeast end. There are no nearshore dangers except the breakwaters at the northwest end of the beach, and several small reefs at the southeast end (FIGURE IV - 68). Also, fishing stakes may extend several miles from shore. The bottom material is chiefly fine sand, with patches of mud and rock. The prevailing winds are of the monsoon type, blowing from the northwest from November through May, from the southeast in June and July, and from the northeast from August through October. The average wind velocity is between 5 and 10 m.p.h. for every month of the year. Gales are not common, and are not seasonal. Fog may be expected 1 or 2 days per month during summer, rarely at other seasons. Large waves come directly in to the beach during the period from August through October. The tidal range is small, being approximately 1 foot at springs, 0.5 foot at neaps. Anchorage in Yongil-man is described under the port of P'ohang-dong in Chapter VI.

3. CHARACTER OF BEACH. The beach extends in a smooth curve for 6.7 miles along the head of the rectangular gulf; it is interrupted by 3 evenly spaced stream mouths in the central part. The northwest end of the beach is isolated by the 2 outlets of the river Hyongsan-gang (*Keizan-kō*) (FIGURE IV - 69), which splits to make an elongate sandy island. The

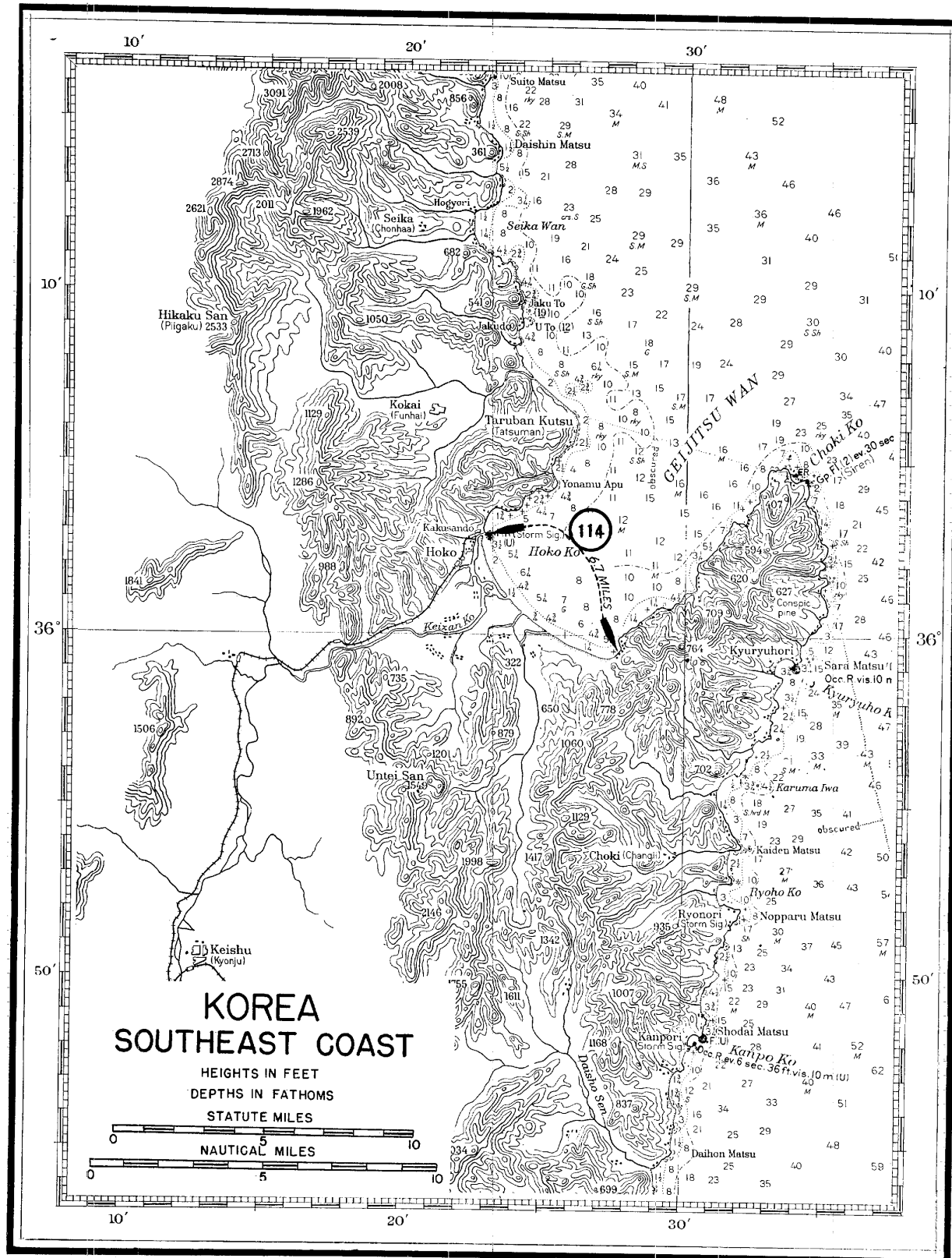


FIGURE IV - 67. East coast, Yongil-man (Geijitsu-wan). Beach area (114).
Section from U.S.H.O. chart 3319.

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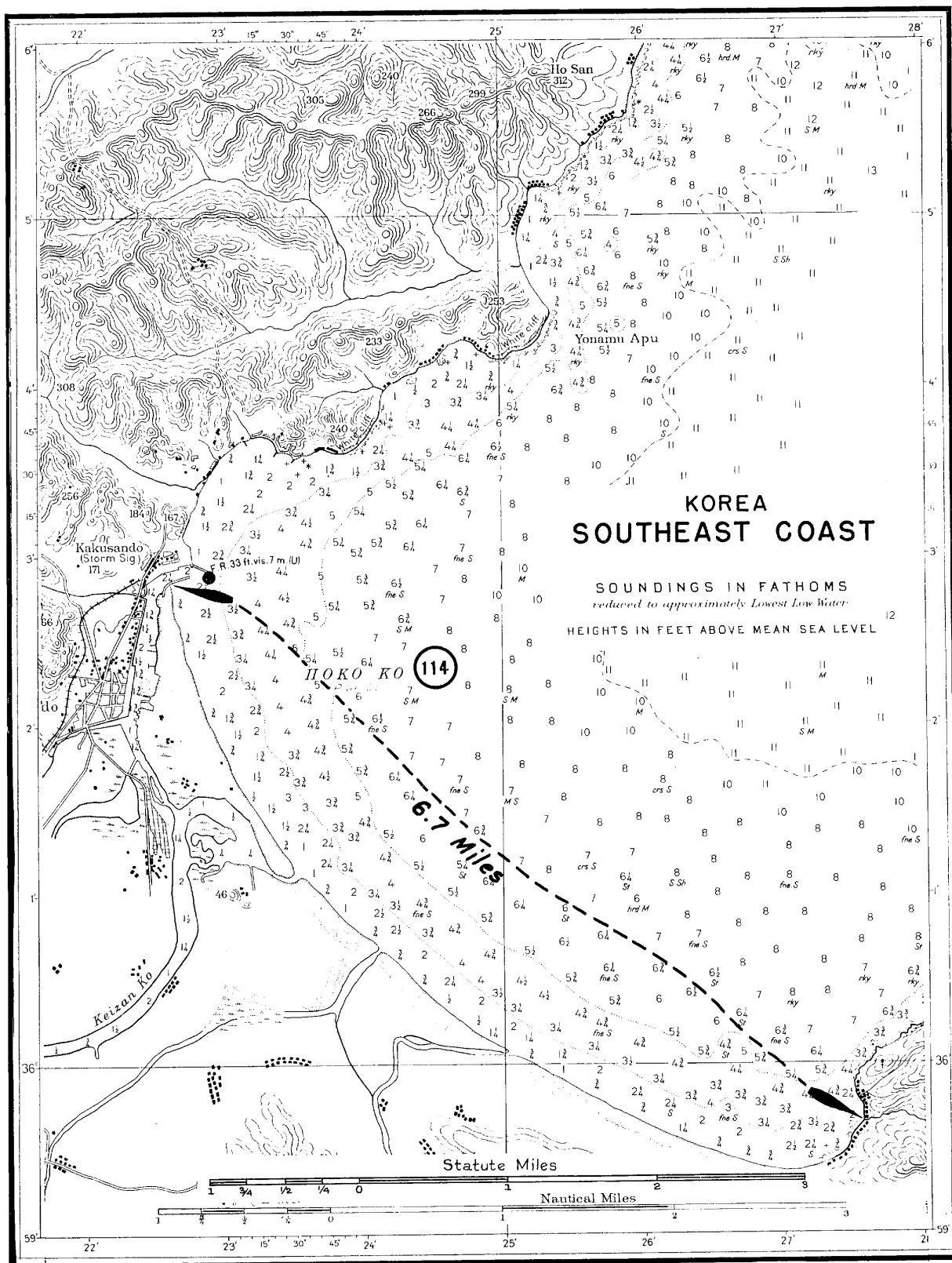


FIGURE IV - 68. East coast, Yongil-man (Geijitsu-wan). Beach area (114).
Section from U.S.H.O. chart 5669 (inset A).

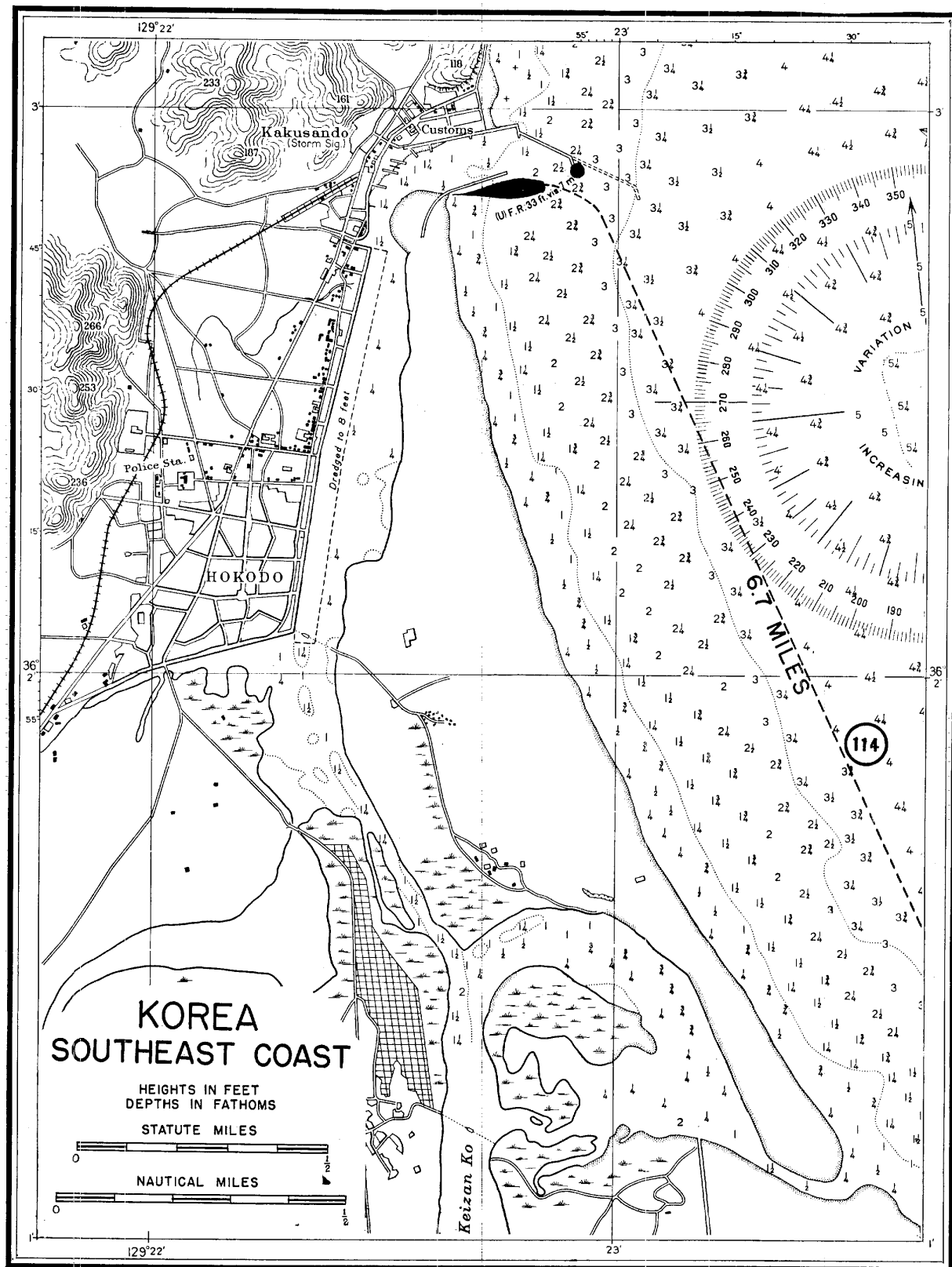


FIGURE IV - 69. East coast, Yongil-mah (Geijitsu-wan). Beach area (114).
Section from U.S.H.O. chart 5669 (inset D), showing northwestern end of beach area.

beach is of firm sand, and is 200 to 250 feet wide, with a flat backshore and a foreshore slope of 1 on 30. Surf is moderate, except with north and northeast winds, when a heavy swell comes in, breaking in several lines in a broad belt. Shore drift has no established trend. The only structures reported are the breakwaters enclosing the northern river outlet to form the harbor of P'ohang-dong (*Hokō-dō*) (Chapter VI); the southern breakwater forms the northwest limit of the beach. There are no habitations on the beach proper, except for a small settlement at the extreme southeast end. Water can be obtained from the streams in the central part of the beach. Also, a supply sufficient for drinking purposes can be obtained by digging shallow wells a few hundred feet inland anywhere along the beach.

4. ADJACENT TERRAIN AND EXITS. From the southeast end of the beach to the southern outlet of the Hyongsang-gang (*Keizan-kō*), the beach is immediately backed by low sand dunes (FIGURE IV - 65). There are also a few dunes on

the sandy island isolated by the river outlets at the northwest end of the beach. The dune belt backing the central and southeast parts of the beach averages 0.5 mile in width. The dunes are not continuous, but are interspersed with patches of flat sandy wasteland and swamp. Behind the dune belt, an irregular plain, cultivated chiefly in rice and bounded by rough steep hills, extends for a maximum of 5 miles inland. The plain is most extensive behind the northwestern part of the beach; hills project to within 1.4 miles of the center of the beach, then quarter toward the shore to the southeast. The southeastern extremity of the beach is directly backed by these hills. The towns of P'ohang-dong (*Hokō-dō*) (Chapter VIII) and Yonil are on the small plain; a number of villages also are scattered over it. The railroad to Pusan (*Fusan*) and the main coast road swing inland from the shore along the northwest edge of the valley flat. A narrow improved road backs most of the beach within 2 miles; however, it can be reached from the beach only by first crossing the dune belt. An airfield, not precisely located, is listed under the name of Geijitsu Bay (Chapter XIV).

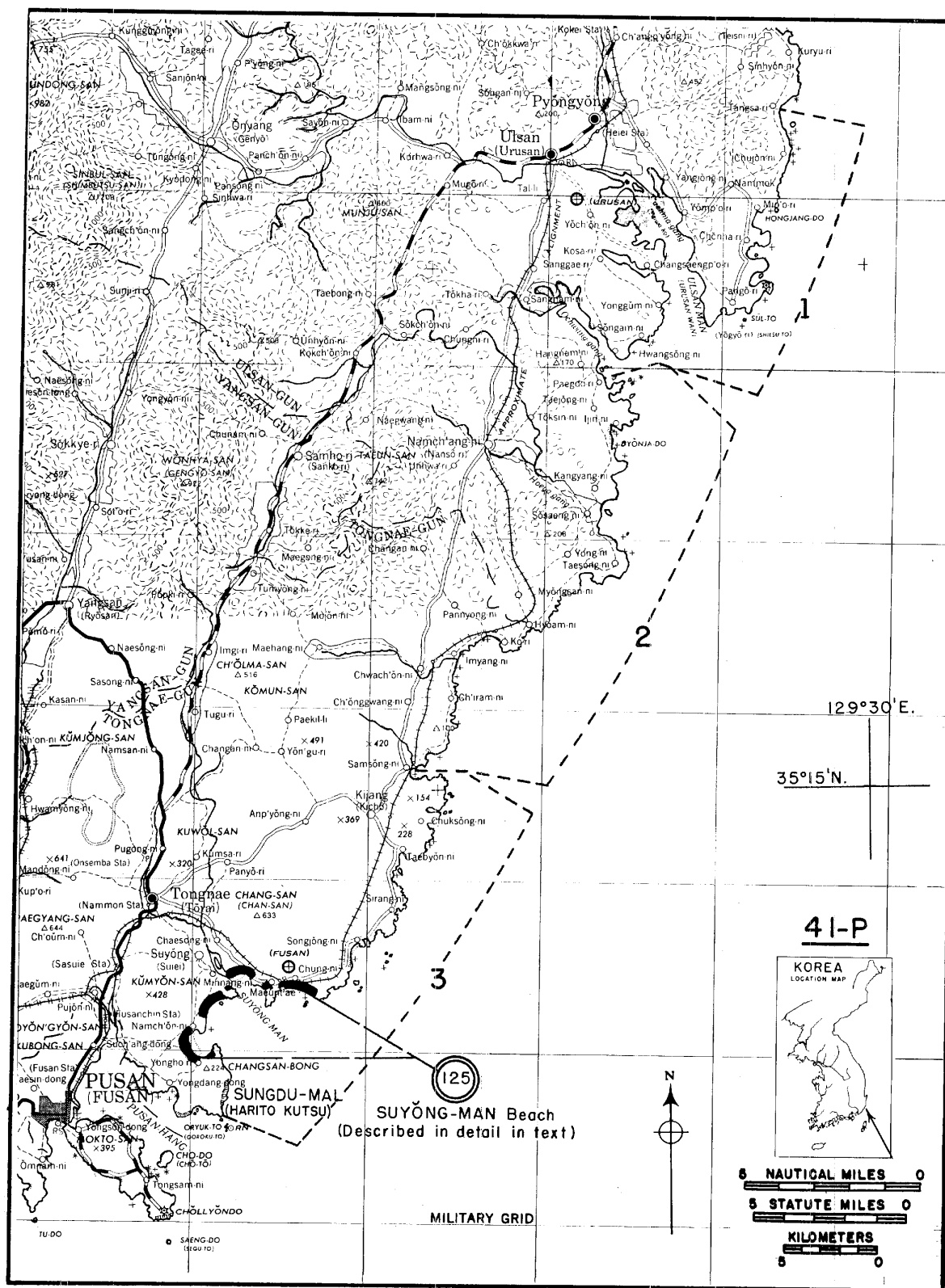


FIGURE IV - 70. Coastal subsector 41 P.
Beach areas are shown on PLAN 15.

P. Tangsa-ri to Sungdu-mal (*Yōtō-matsu*, Harito Kutsu).
 (35°35'N, 129°27'E; 35°06'N, 129°07'E)
 (PLAN 15; FIGURE IV-70; U.S.H.O. chart 3241, 5312,
 5460, and 5463)

(1) *Coast.*

The bottom gradient off this coastal subsector is quite irregular. The 10-fathom curve varies from close inshore to a mile off shore. Farther out, depths do not increase as rapidly as in the waters to the north, and there are few soundings as deep as 100 fathoms.

The coast is very irregular, with several prominent peninsulas and points and many lesser ones. There are more rocky strips than beaches, except within the major indentations.

The long southward-extending peninsula at the beginning of this subsector is formed by the south end of the chain of hills which begins at Changgi-gap (Changyong-gap), 30 miles northward. Groups of irregular hills form the background of the rest of this coast. Several cultivated valleys separate these hill groups.

The secondary highway is about 10 miles inland along most of this subsector, but an improved road runs southward from Ulsan (*Urusan*) to Pusan (*Fusan*), and is close to the coast in the southern part of the subsector. The railroad roughly parallels the improved road except in the central part of the subsector, where it approaches the coast more closely.

1

From Tangsa-ri southward to Hwaamch'u (Haamuchu), the eastern entrance point of Ulsan-man (*Urusan-wan*) (U.S.H.O. chart 3241), the coast of the long peninsula is rocky with first a few exposed beaches and then, toward the tip, 3 protected beaches (beach area (116), TABLE IV-15). The latter are at the heads of separate coves formed by a succession of promontories jutting over ½ mile seaward. There is also a beach within the small harbor of Pango-ri (*Hōgyo-ri*; inset on U.S. H.O. chart 5463), which occupies a cove indenting the south shore of the peninsula (FIGURE IV-71), and is protected by a breakwater (Chapter VI).

The shoreline of Ulsan-man (*Urusan-wan*) is very irregular, with lesser inlets branching off it (U.S.H.O. chart 5463). There are many rows of fishing stakes. The innermost part, where several joining streams form a delta, is shallow, and is composed mostly of mud flats, with some salt pans on them. The eastern shore (beach area (117), TABLE IV-16) and parts of the western shore (beach area (118)) are sandy. Back of the delta are two valleys, one leading due west and the other northward. Both are cultivated. The slopes of the hills which back the rest of the shores are wooded. Changsaeng-p'o (Chanshin Po), a long inlet on the west side of the bay, has a channel extending some distance into it. The shores are backed by steep hills, mostly wooded (FIGURE IV-72). There is a 2-mile beach along the south shore of the inlet (beach area (118)). The limited port facilities of Ulsan-man (Chapter VI) are located at Changsaengp'ori, on the north shore of the inlet.

A broad hilly headland separates Ulsan-man from the Oehwang-gang (*Gaikō-kō*) estuary. The low southeast shore of the headland is mostly rockbound, but includes one stretch of open sandy beach (beach area (119)). A conspicuous peak, Pongdae-san (*Pondei-san*), reaching 440 feet is less than

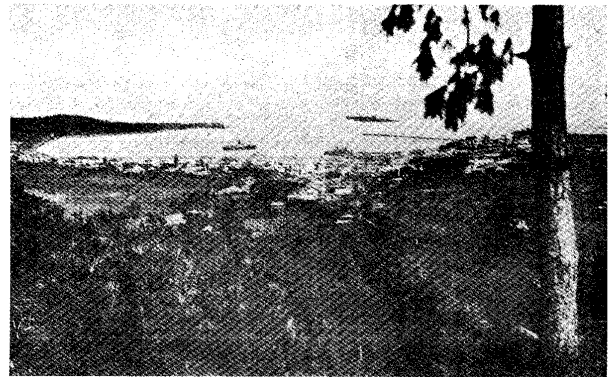


FIGURE IV-71. East coast. Vicinity of Ulsan-man (*Urusan-wan*)
 Beach area (116).

View southeastward over village and harbor of Pango-ri (*Hōgyo-ri*), in small cove indenting south end of peninsula to east of Ulsan-man. Approximate position 35°29'N, 129°26'E; U.S.H.O. chart 5463 (inset).



FIGURE IV-72. East coast. Ulsan-man (*Urusan-wan*).
 Beach area (118).

View southeastward from high ground behind village of Changsaengp'o-ri (Chanshipodon) over Changsaeng-p'o (*Chanshin-po*), inlet on west side of Ulsan-man, showing whaling ships at anchor. Land in left background is the peninsula terminating in Hwaamch'u (Haamuchu), the eastern entrance point of Ulsan-man. Approximate position 35°30'N, 129°23'E; U.S.H.O. chart 5463.



FIGURE IV-73. East coast. Ulsan-man (*Urusan-wan*).
 View east by south from Pongdae-san (*Pondei-san*), hill surmounted by ruined castle, toward the entrance to Ulsan-man. Village in right middleground is named Shimp'o on U.S.H.O. chart 5463. Approximate position of Pongdae-san, 35°28'40"N, 129°22'35"E.

1/2 mile from the coast northeast of this beach (FIGURE IV-73).

The Oehwang-gang (*Gaikō-kō*) estuary has a beach, partly fronted by reefs, along the outer part of its southwestern side, and a shorter beach on its northeastern side (beach area (120)); farther inland it is largely blocked by kelp beds and mud flats. There are some salt pans near its head. The shores are backed by steep hills.

2

From the village of Pangdo-ri (Paegdo-ri on PLAN 15), on the southwestern side of the estuary mouth, the coast is broken and jagged for 4 miles (U.S.H.O. chart 3241). Several points and bluffs with off-lying islands jut out to sea. There are beaches in the indentations formed by these points (beach area (120)).

On the southern side of the Hoeya-gang river mouth there are 2 beaches (beach area (121)), beyond which the coast becomes rocky around the end of a headland. There are rocks off its extremity. From this prominent feature south to the end of the subdivision, the coast is mostly steep, with more rocky strips than beaches (beach area (122)).

The small protected bay at the end of the subdivision has a beach at its head (beach area (123)); its northern and southern shores are rockbound. There is a small beach close to the outer end of its northern shore.

The irregular masses of mountains back of the coast of this subdivision are broken by the cultivated valley of the Hoeyagang and those of several other streams.

The hill slopes are covered by scattered coniferous trees and brush.

3

From Samsong-ni southward to the northeastern entrance point of Suyong-man (*Suyon-wan*) (U.S.H.O. chart 5460), the coast resembles that to the northward. There are only a few short stretches of beach (beach area (124)); the largest is an open beach near Songjong-ni, with several island rocks a mile off shore.

Suyong-man (*Suyon-wan*) (U.S.H.O. chart 5312) is an open bay somewhat obstructed by rocks; the beaches around its shores are described in detail as beach area (125). Suyong-man is separated from Pusan-hang (*Fusan-kō*), the harbor of the large city of Pusan (*Fusan*) (Chapters VI and VIII), by a hilly peninsula with mainly rocky shores, terminating in Sungdu-mal (*Yōtō-matsu*, Harito Kutsu).

Back of this coast the mountainous terrain is similar to that immediately to the north; it is broken by valleys leading into the large bays (FIGURE IV - 74). Peaks reaching over 1,800 and 1,400 feet dominate groups of mountains directly inland of Pusan-hang and Suyong-man, and there is also one, reaching 2,074 feet, north of the latter. The slopes are uncultivated and there are sparse growths of coniferous trees and brush.

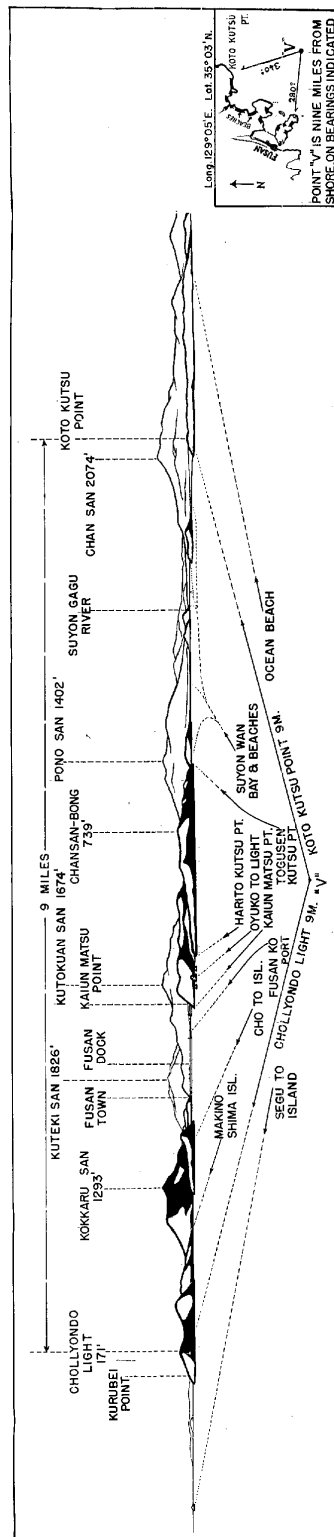


FIGURE IV - 74. *East coast*. Vicinity of Suyong-man (*Suyon-u-m*) and Pusan (*Pusan*). Beach areas (125) and (132) to (134). Paeonamic coastal sketch. Names other than those appearing on PLAN 15 are from U.S.H.O. charts 5312 and 5460. Approximate position of Sungdu-mal (Harito Kusu), 35°06'N, 129°07'30"E.

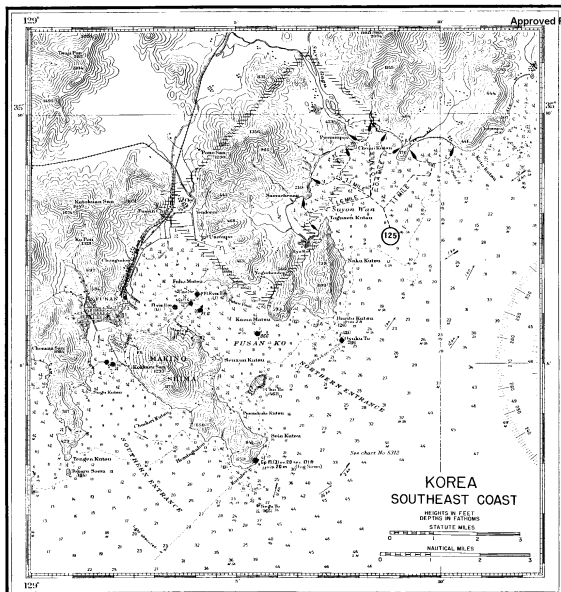


FIGURE IV-75. East coast, Suyong-man (Suyong-san). Beach area (125).
Section from U.S.H.O. chart 5460. Area enclosed by shaded strip is covered by aerial photograph (FIGURE IV-78).

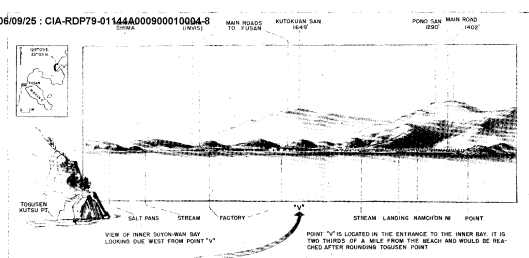


FIGURE IV-77. East coast, Suyong-man (Suyong-san). Beach area (125).
Panoramic sketch of southwestern bayhead beach and adjacent terrain. Names, other than Nanchon ni (Nanchonni), are taken from U.S.H.O. chart 5460.

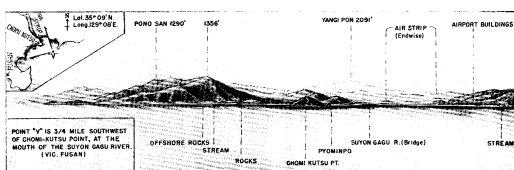


FIGURE IV-76. East coast, Suyong-man (Suyong-san). Beach area (125).
Panoramic sketch of central bayhead beaches and adjacent terrain. Names are taken from U.S.H.O. chart 5460.

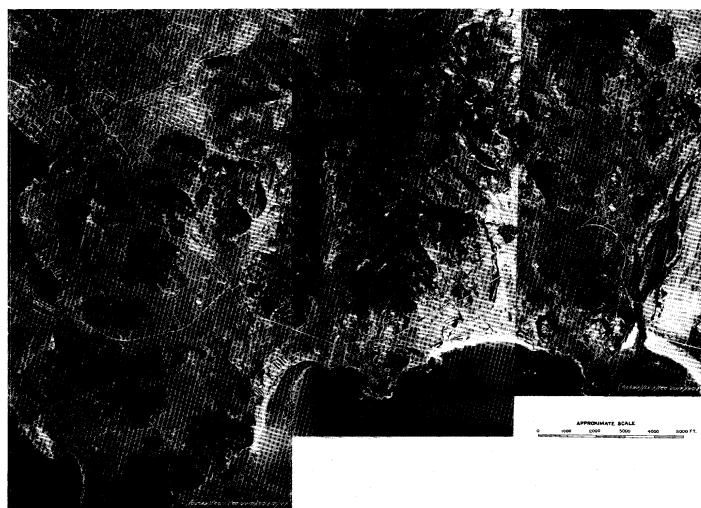


FIGURE IV-78. East coast, Vicinity of Suyong-man (Suyong-san) and Pusan (Fusan). Beach area (125) and (132).
Area covered by this figure is enclosed by shaded strip on FIGURE IV-75. A.A.F. 468BG/AMR 22, dated 17 November 1944.

FIGURES
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COASTS AND LANDING BEACHES

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(2) Landing beaches.

(a) General.

TABLE IV - 16
LANDING BEACHES OF COASTAL SUBSECTOR 41 P
Reliability FAIR. (PLAN 15)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(117) E shore of Ulsan-man.	Approach constricted; N end of beach obstructed.	5.4 mi.	50 to 75 ft.	1 on 15.	Surf light; heavy with S winds.	Sand and pebbles.	Narrow sandy strip 150 to 1,000 ft. wide, backed by steep hill slopes.	Trail in S, and improved road in N follow back edge of beach, connecting to Pyongyang.
(118) Vicinity of Chang-saengp'o-ri.	Obstructed.	3 beaches: 0.2, 1.2, and 2.0 mi.	50 to 75 ft.	1 on 15.	Surf light.	Sand.	Narrow sandy strip backed by steep hill slopes.	Winding trails lead over hills to Ulsan.
(119) Vicinity of Hwangsong-ni.	Obstructed.	0.7 mi.	50 to 75 ft.	1 on 20.	Surf moderate.	Firm sand.	Flat in rice 1,400 ft. wide, backed by terraced hills.	Trails over hills connect to Ulsan 6 mi. inland.
(120) N from Yonja-do.	Obstructed.	Beach 5.5 mi., rocky coast interrupts.	50 to 75 ft.	1 on 20.	Surf moderate to light.	Firm sand; soft at N end.	Backed by hill slopes.	Trails over rough hills to R.R. and improved road 2 to 4 mi. inland.
(121) Vicinity of Sosaeng-ni.	Obstructed.	1.2 mi., with rocky interruption; also pocket beach to S.	100 to 125 ft.	1 on 25.	Surf moderate.	Firm sand; soft near mouth of Hoeya-gang.	Backed by small 0.4-mi.-wide valley in rice leading inland through mountains.	Trails run inland along valley to R.R. and improved road 4.5 mi. inland; river must be crossed.
(122) Vicinity of Imyang-ni.	Obstructed.	Pocket beaches; 0.1 to 0.8 mi.	75 to 100 ft.	1 on 20.	Surf moderate.	Firm sand; shorter beaches may have pebbles.	Steep slopes or narrow sandy strip backed by steep slopes.	R.R. to Pusan within 1 mi. except at N; trails over hills lead to improved road 1½ to 4 mi. inland.
(123) Vicinity of Samsong-ni.	Partly obstructed; bottom slope flat.	Pocket beach, 0.9 mi.	100 to 125 ft.	1 on 25.	Surf light; moderate with E winds.	Firm sand.	Small river valley; sandy near shore; in rice inland.	R.R. to Pusan follows back of beach; improved road passes through Samsong-ni.
(124) Vicinity of Kijang.	Generally obstructed; drying flat fronts S beach.	Pocket beaches; average 0.4 mi.	50 to 75 ft.	1 on 15.	Surf moderate.	Sand and pebbles.	Steep slopes or narrow sandy strip backed by steep slopes.	R.R. to Pusan 0.1 to 1.5 mi. inland; improved road backs beaches except at N.
(125) Suyong-man. (FIGS. IV - 74 to IV - 79). (See also (b) below.)	Obstructed; bottom slope flat.	5 beaches; average 0.8 mi.	100 ft.	1 on 20.	Surf moderate.	Firm sand.	Irregular cultivated coastal flat, dotted with hills.	R.R. within 1 mi. of E beaches; road everywhere accessible, over cultivated fields.

(b) *Suyong-man (Suyon-wan) beach area (125)*. Reliability GOOD. (PLAN 15)

1. LOCATION AND EXTENT. Five short sand beaches, separated by small rocky capes, line the shores of Suyong-man (FIGURES IV - 74 to IV - 78). The lengths of the beaches, counterclockwise from the northeast, are 1.1, 0.4, 0.7, 1.1, and 1.6 miles. The approximate limits of the beach area are 35°07' N, 129°07' E; 35°09' N, 129°10' E. The approaches and the nearshore area are heavily obstructed by reefs; the bottom slope is flat, and a sandy drying flat fronts each beach; however, the beaches possibly represent the most suitable landing places within 30 miles for flanking the important port and city of Pusan (*Fusan*) (Chapters VI and VIII). Also, Fusan airfield (Chapter XIV) immediately backs one of the beaches (FIGURE IV - 78; the location is 2 miles west of that shown on PLAN 15). Good landmarks are the 3 hilly wooded capes which separate the beaches.

2. SEA APPROACH. The approach to the 30-foot depth is obstructed by a number of shoals covered by depths which vary from 4 to 27 feet, and by 2 single rocks off the east end of the eastern 1.1-mile beach which dry 1 foot at low water (FIGURE IV - 75). Most of these dangers are off the northeast

part of the beach area, leaving a channel over 1 mile wide on the southwest from which all but the eastern 1.1-mile beach can be approached within a mile before depths less than 27 feet are encountered. The 30-foot depth line is irregular, averaging 2,000 feet off the eastern 1.1-mile beach; 3,000 feet off the 0.4-mile beach; 4,800 feet off the 0.7-mile beach; 3,000 feet off the western 1.1-mile beach; and 4,800 feet off the 1.6-mile beach. Following through the same sequence of beaches, the 18-foot depth lies at distances of 1,000 feet, 1,500 feet, 2,400 feet, 1,200 feet, and 3,000 feet. The most important nearshore dangers are rocks at the east end of the eastern 1.1-mile beach; rocks at the northeast and southwest ends of the western 1.1-mile beach; and rocks at the northern end of the 1.6-mile beach. Also, there is a sand bar off the mouth of the Suyong-gang (*Suyong-gagu*) (FIGURE IV - 78). The bottom slope is everywhere flatter than 1 on 60; it reaches a minimum of 1 on 170 off the 1.6-mile beach. The bottom is composed of sand and shells, with a few rocky patches. The prevailing winds are from north-northwest from November through April, northwest in May, east-southeast in June, south-southeast in July, northeast in August, north-northeast in September, and north in October. The average velocity of the wind is between 5 and 10 m.p.h. for each

month; gales are infrequent and not seasonal. Fog occurs 2 to 3 days per month in summer, but is rare at other seasons. Waves come directly onshore during June and July; in other months they come in quartering or are absent. The tidal range is small; the range of springs is approximately 2 feet.

Anchorage within Suyong-man is reported poor on account of the danger from underwater rocks. Unsheltered anchorage should be practicable in the vicinity of the 10-fathom line, just outside the entrance of the bay; the bottom is mainly mud, with some rocky patches.

3 and 4. CHARACTER OF BEACH, ADJACENT TERRAIN, AND EXITS. The general nature of the terrain, with its wooded hills cut by valleys covered with terraced crops, is shown in FIGURE IV - 78, which includes the 3 western beaches. The pictures were probably taken near high tide. The two eastern beaches are described from aerial photographs (A.A.F., M7-40-25-AC. 288-4), but these are not included as figures because they are blurred.



FIGURE IV - 79. East coast, Suyong-man (*Suyon-wan*).
Beach area (125).

Exact location uncertain, but probably looking E by N from small peninsula immediately south of Maeun'ae village across northeasternmost beach in Suyong-man toward hill spur terminating in Koto Kutsu. Approximate position 35°09'N, 129°09'E; U.S.H.O. chart 5460.

The eastern 1.1-mile beach (FIGURE IV - 79) is 150 feet wide, with a foreshore slope of approximately 1 on 20. The backshore and the terrain for 200 to 300 feet behind the beach are soft and sandy. A small shallow stream, with a winding channel, backs the southwest end of the beach within 500 feet; it quarters inland, so that it is 1,500 feet inland from the northeast end of the beach. The terrain behind the soft sandy strip backing the beach is a complex of hills and valleys, with irrigated cultivation in the valleys. A number of buildings are scattered within a 1,000-foot radius of the center of the beach.

The 0.4-mile beach is 50 feet wide, and is firm, with a slope of approximately 1 on 10. The northwest half is backed by a village; the southeast by a low wooded hill and a sandspit.

The 0.7-mile beach (northeasternmost beach shown on FIGURE IV - 78) is 500 feet wide, with a slope of 1 on 30. It is backed by a scrub-covered strip of low dunes 300 to 400 feet wide, which has been breached in a number of places, and which has been partially destroyed in the building of the highway and airfield. The small section of this beach on the west side of the Suyong-gang (*Suyon-gagu*) is backed by very steep

hill slopes, and the highway which appears on FIGURE IV - 78 is cut into the hillside high above the beach.

The western 1.1-mile beach is rocky, narrow, and irregular in its eastern one-third, but the western two-thirds is 50 to 75 feet wide throughout, is firm, and gives direct access to a large area of irrigated fields.

The 1.6-mile beach is only 10 to 20 feet wide; it is probably soft and muddy in many places, and has a slope of 1 on 30 or flatter. The beach is interrupted by a small stream on the north, and by another stream and salt pans in the south. A village backs the beach at the north end, and most of the central part of the beach is backed by a number of large buildings.

A highway is everywhere within 4,000 feet of these beaches; in most places it is within 1,500 feet. The east coast railroad (not shown on FIGURES; inaccurately located on PLAN 15) skirts the shore of the headland east of the easternmost beach, loops inland from the eastern end of the beach to a point 3,000 feet behind the center of the beach, then swings back toward the shore, being 2,000 feet inland at the west end of the beach. It comes back to the shore at the north end of the 0.4-mile beach, then swings inland up the valley of the Suyong-gang, on the east side of the airfield, before swinging back down to Pusan (*Fusan*). Part of the city of Pusan is shown on FIGURE IV - 78. Pusan (Chapters VI and VIII) is reported to be the chief port of disembarkation for Japanese soldiers moving into Korea and Manchuria. It had an estimated population in 1940 of about 250,000, and is chiefly noted as a port and railroad center, secondarily as a manufacturing city.

Q. Ullung-do (*Utsuryō-tō*, Matsu Shima, Dagelet Island).
(37°30'N, 130°52'E)
(PLAN 16; FIGURE IV - 80; U.S.H.O. chart 3319)

(1) Coast.

The island is steep-to in most places. Soundings immediately off shore range from 1 to over 40 fathoms. The 100-fathom line is within ½ mile to ¾ miles of the coast all around the island.

The coast is steep, alternating between cliffs and beaches (beach area (126), TABLE IV - 17) with a few rocky strips. The hill slopes behind the beaches start close to the shore and are often steep.

The entire island is mountainous; the terrain is dominated by an irregular group of peaks, three of which are close to the center, reaching respectively 2,985, 3,011 and 3,230 feet. The highest is Songjin-bong (Songdae-bong). There are several others well above 2,000 feet.

Almost all the coastal points are formed by steep, jutting spurs of the mountains. In several places, such as in the vicinity of Such'ung-dong, To-dong and Namyang-dong, the elevation is well over 1,000 feet only a few hundred yards inland. On all sides of the island numerous short streams flow down from the mountains.

The island is densely populated, and, although forests occupy some 70% of the land, agriculture is carried on by intensive modern methods, with white potato and maize as the predominant crops.

At the most northerly point, formed by a hill rising to 927 feet, less than ½ mile from the cliffs, there are small but high detached rocks. Westward along the coast there are cliffs for 2 miles, then a beach 1½ miles long. There is a detached rock off the center of the cliffy coast and rocks off the beach. The

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COASTS AND LANDING BEACHES

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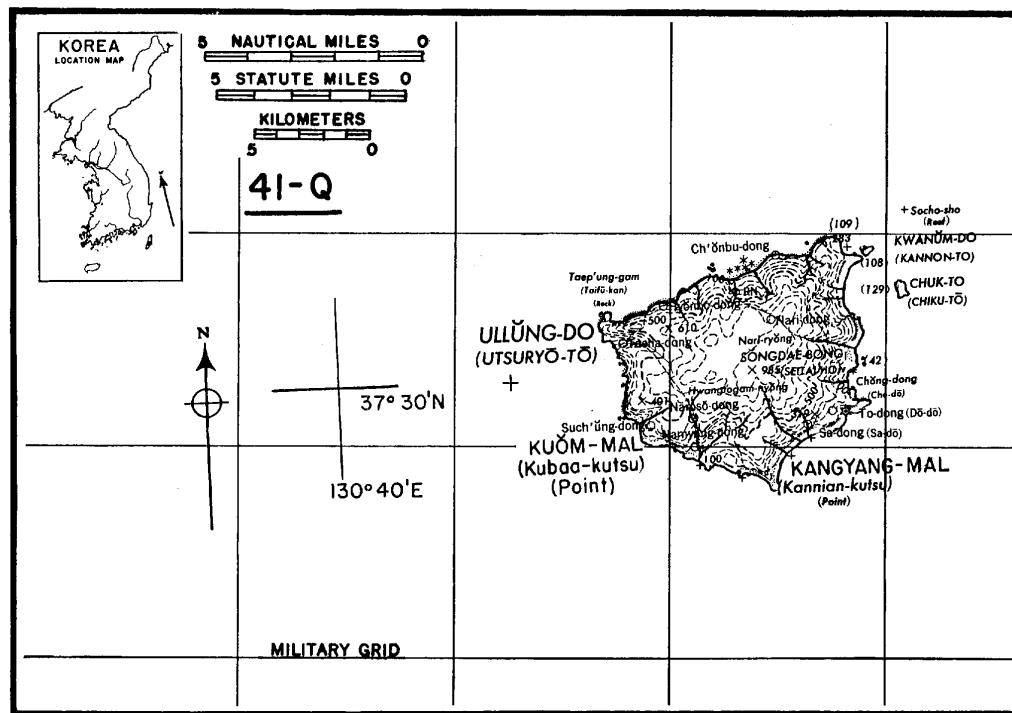


FIGURE IV - 80. Coastal subsector 41 Q.

Beaches are shown on PLAN 16.

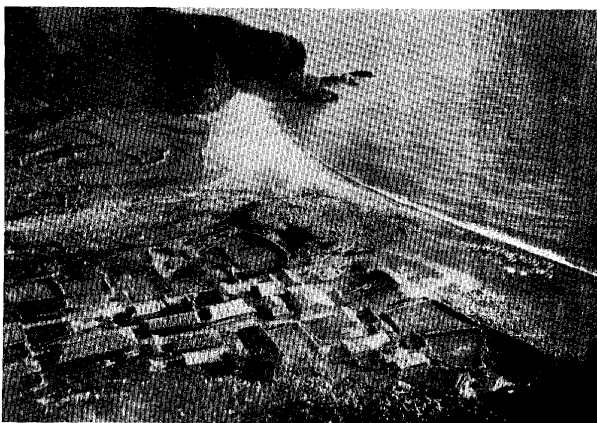


FIGURE IV - 81. Ullung-do (Utsuryō-tō). Beach area (126).
View southward over village of Taeha-dong in northwestern part of
island, showing pocket beach. Approximate position 37°30'N,
130°48'30"E; U.S.H.O. chart 3319 (inset).

remainder of the north coast, west of the beach, is mainly cliffy. The west coast is likewise cliffy, and its central part is rock-bound. There is a small beach at the mouth of a stream at Taeha-dong (FIGURE IV - 81), and another beach ½ mile south. At the southwestern end of the island, between two cliffy bluffs facing southwest, is a beach fronting the village of Such'ung-dong. Cliffs and beaches alternate along the southwest coast. Immediately northeast of Kanyong-mal (Kannian-kutsu), the southern extremity of the island, is a beach about

2 miles long. There are several offshore rocks along the beach. The remainder of the southeast coast is composed of cliffs, interrupted by a small cove, with a pocket beach at the mouth of the narrow valley in which lies To-dong (Dō-dō), the principal settlement of the island (FIGURES IV - 82 and IV - 83). The southeast coast terminates in a thin cliffy point, jutting eastward. The cliffs continue for about ½ mile along the eastern side of the island, ending in a small point off which is a detached rock. North of the point is a small bight with a beach at its head fronting the village of Chong-dong (Cho-dō); this beach appears to be more sheltered than any other place along the island's coasts (FIGURES IV - 84 and IV - 85). Off the northern entrance point of the bight a detached pinnacle rock rises abruptly to 138 feet a few hundred yards off shore (FIGURE IV - 86). Northward of the pinnacle rock is a smaller bight into which a stream flows (FIGURE IV - 87). The remainder of the east coast is lined with cliffs.

About 2 miles off this last cliffy stretch is Chuk-to (Tei Somu), a rockbound and cliffy island, the highest point of which reaches 424 feet (FIGURES IV - 86 and IV - 87). A smaller cliffy island, Kwannum-do (Kannon-tō), lies close off the northeastern extremity of the island, and is 353 feet high (FIGURE IV - 88).

Along the short stretch between the northeastern and northern extremities of the island the coast is steep, with rocks off shore.

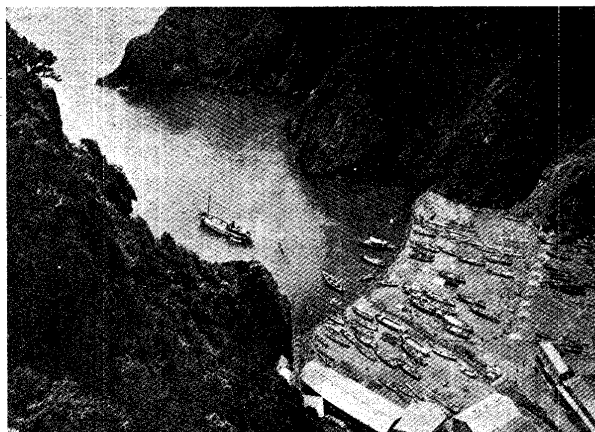


FIGURE IV - 82. Ullung-do (*Utsuryō-tō*). Beach area (126). View south-southwestward over beach and fishing harbor fronting village of To-dong (*Dō-dō*), at head of small cove in southeastern part of island. Approximate position $37^{\circ}29'N$, $130^{\circ}54'30''E$; U.S.H.O. chart 3319 (inset).

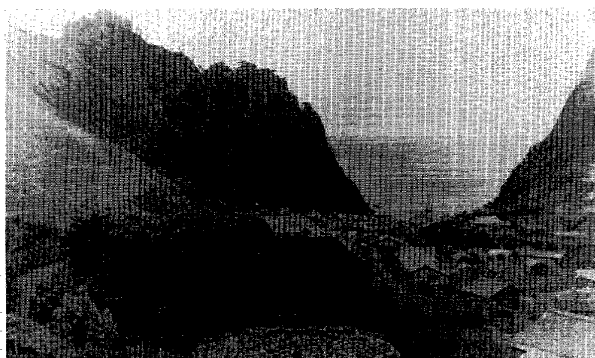


FIGURE IV - 83. Ullung-do (*Utsuryō-tō*). Beach area (126). To-dong (*Dō-dō*), the principal settlement of the island, looking southeastward toward harbor seen in FIGURE IV - 82. 15 June 1917. Approximate position $37^{\circ}29'N$, $130^{\circ}54'30''E$; U.S.H.O. chart 3319 (inset).



FIGURE IV - 84. Ullung-do (*Utsuryō-tō*). Beach area (126). View east-southeastward from settlement of Chong-dong (*Cho-dō*), on east shore of island and about $\frac{3}{4}$ mile north of To-dong (*Dō-dō*). Note pinnacle rock, the tip of which is seen in FIGURE IV - 85. Approximate position $37^{\circ}29'30''N$, $130^{\circ}55'E$; U.S.H.O. chart 3319 (inset).



FIGURE IV - 85. Ullung-do (*Utsuryō-tō*). Beach area (126). View northward across bay fronting village of Chong-dong (*Cho-dō*). Right center, tip of pinnacle rock seen in FIGURE IV - 84. Island faintly seen in extreme right background is Kwanum-do (*Kannon-tō*), about 5 miles northward. 1 June 1917. Approximate position $37^{\circ}29'30''N$, $130^{\circ}55'E$; U.S.H.O. chart 3319 (inset).

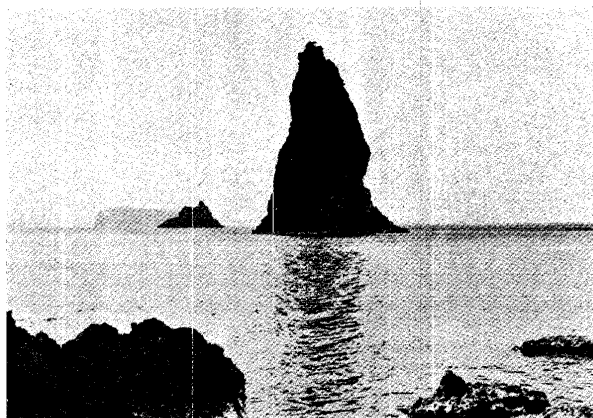


FIGURE IV - 86. Ullung-do (*Utsuryō-tō*). Beach area (126). View northeastward from northern end of bay seen in FIGURES IV - 84 and IV - 85. Pinnacle rock in center is 138 feet high. Island on left skyline is Chuk-to (*Chiku-tō*, Tei Somu). 1919. Approximate position $37^{\circ}30'N$, $130^{\circ}55'E$; U.S.H.O. chart 3319 (inset).



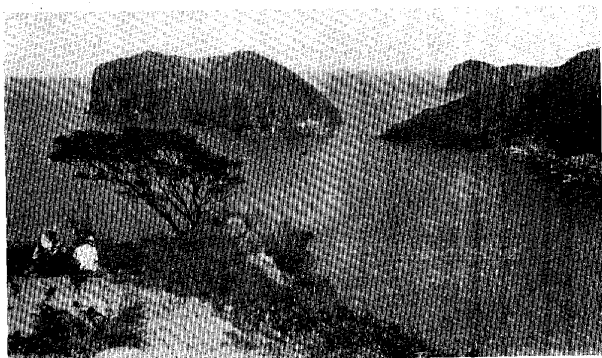
FIGURE IV - 87. Ullung-do (*Utsuryō-tō*). View north-northeastward toward Chuk-to (*Chiku-tō*, Tei Somu), from above southwest shore of small bight on east coast, immediately north of bay seen in FIGURES IV - 84 and IV - 85. Approximate position $37^{\circ}30'30''N$, $130^{\circ}55'E$; U.S.H.O. chart 3319 (inset).

(2) Landing beaches.

TABLE IV - 17

LANDING BEACHES OF COASTAL SUBSECTOR 41 Q
Reliability GOOD. (PLAN 16)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(126) Ullung-do. (Figs. IV - 81 to IV - 88).	Generally obstructed.	Pocket and strip beaches; 0.1 to 1.8 mi.	50 to 75 ft.	1 on 15.	Surf heavy with onshore winds.	Shorter beaches are pebbly.	Backed by steep slopes and mountain valleys of rugged island.	Trails.

FIGURE IV - 88. Ullung-do (*Utsuryō-tō*).

View east-southeastward across cove between two headlands at north-eastern extremity of main island. Island in left center is Kwanum-do (*Kannon-tō*). Right background, northern end of Chuk-to (*Chiku-tō*, Tei Somu). Approximate position 37°33'N, 130°55'E; U.S.H.O. chart 3319 (inset).

42. Sungdu-mal (*Yōtō-matsu, Harito Kutsu*) to Haenam-gak (*Kainan-kaku*)

(35°06'N, 129°07'E; 34°17'N, 126°31'E)
(PLANS 15 and 17 to 23; FIGURE IV - 176)

The approaches to the 140-mile-long stretch between Sungdu-mal (*Yōtō-matsu, Harito Kutsu*) and Haenam-gak (*Kainan-kaku*) generally are obstructed by off-lying islands and islets, and by rocks, reefs, and shoals. Most of the approaches to the outer islands and islets are clear.

Bottom gradients are irregular, ranging from *steep* to *flat*; along the greater part of the coasts of both the mainland and the islands, however, the gradients are *steep* to *moderate*.

The nearshore bottom consists of a mosaic of rock, gravel, sand, mud, and shells off the hilly or mountainous coastal stretches. It is composed of mud or sand with patches of shells off the alluvial stretches and drying tidal flats. The materials making up the nearshore bottom grade seaward into mud, with local areas of sand or shells.

The winds are of the monsoon type, blowing from the north and northwest from September to April or May, and from south and southwest from May or June through August. Average wind velocities are 7 to 12 miles an hour, with the maximum coming during fall and early winter. Fog is uncommon in the eastern part of the sector, but it is common during summer in the western part, reaching a maximum of 4 days a month in July. The beaches are so protected by the numerous

islands, that only those on the seaward side of the outer islands have heavy surf.

The coast is irregular, consisting of long peninsulas alternating with deeply indented bays. Much of the coast, particularly along the bays, is fronted by drying tidal flats, which are composed of mud or sand.

Cliffs and slopes of varying degrees of steepness, backed by hills or mountains, make up most of the coast. The cliffs and slopes generally rise directly from the water's edge, but in many places, particularly at the heads of the coves, they are fronted by narrow beaches. At intervals, the hilly or mountainous parts of the coast are broken by low, level, sandy or muddy stretches which range in length from a few hundred feet to several miles. These stretches front alluvial flats or plains; where the coast is muddy, diked salt pans or earth embankments may border the shore. The largest river plains lead inland from the heads of the principal bays.

The mountains which back the coast and surround the alluvial plains are highest in the eastern part of the sector, and become progressively lower westward; they are steep and rugged throughout. The mountain slopes are cut by many short, steep, narrow ravines.

The shores on the larger islands are similar to those on the mainland, except that extensive river plains are lacking. The islets consist of hills or mountains terminating in slopes and cliffs.

Vegetation on the upland areas of the mainland and the off-lying islands and islets consists principally of a mixture of grass, brush, scrub pine, and pine trees. Stands of deciduous trees are present in places, particularly on Cheju-do (*Saishū-tō*), the large island at the southwestern end of the sector. Some of the lower, gentler hill slopes are cultivated. The alluvial flats are planted chiefly to irrigated rice or grain. Orchards are present around most of the villages.

Villages, towns, and cities are located on the coastal flats around the indentations, or inland up the river valleys. The larger settlements are served by improved highways or railroads, but the villages are connected only by trails or unimproved roads.

There are many beaches in this sector, both on the mainland and on the islands. It is probable that more beaches are present than are shown, because of the relatively poor information on this sector. The beaches, almost without exception, are either narrow strips fringing the shores of hilly peninsulas, or short pocket beaches in indentations where small stream valleys reach the shore.

In general, the beaches are unsuitable for landing, since the great majority of the approaches are constricted into narrow channels by islands, reefs, and rocks; most of the beaches are

fronted by extensive mud flats; and the exits are either directly to steep hill slopes, or onto small flats covered with terraced cultivation, which dwindle inland to narrow, steep valleys. Those exposed to the sea are firm, but those in the well-protected bays and channels probably are soft and muddy. There are no specific data on slope or composition, but from the characteristics of such beaches elsewhere, the slopes are probably fairly steep, 1 on 10 or 1 on 15, and the material is sand and gravel. The beaches are generally short, averaging approximately 1 mile, but in the central and western part of the area, some of the fringing beaches reach lengths, not including minor interruptions, of 7 to 9 miles.

There is a marked difference in tidal character along this coast, as compared with the uniformly low tides of the east coast. The tides increase from about 2 feet in the vicinity of Sungdu-mal (*Yōtō-matsu*, Harito Kutsu), the eastern end of the sector, to 14 feet near Haenam-gak (*Kainan-kaku*). As a consequence, tidal flats fronting the beaches are wide and numerous in the western part of the sector, whereas they are almost entirely lacking on the east coast. Not only are the approaches to the beaches channeled by the numerous islands and reefs, but there are many scattered rocks inside the 30-foot depth. Also, particularly in the western part of the sector, the nearshore slope is flat, and strong tidal currents occur in the narrow channels.

All the exits from the beaches are over slopes which are either forested, or terraced for irrigated crops. Communication inland, or across the islands, is by trail or poor road in most cases; there are notable exceptions, as at Chinhae (*Chinkai*) (35°09'N, 128°39'E) and Masan (35°12'N, 128°34'E), where both a highway and a railroad have been extended to the shore. The deeply indented bays reach inland in the western part of the sector; in the central part, a railroad extends near the heads of the bays, with a branch running down the peninsula on which the port of Yosui (*Reisui*) (34°44'N, 127°44'E) is located. Only near Yosui can the major transportation routes be reached from the beaches without great difficulty.

Cheju-do (*Saishū-tō*) has an almost continuous low rocky shore. The few short beaches which do exist are obstructed for the most part with reefs and rocks; they are narrow, and are exposed to the heavy seasonal surf caused by the monsoon. The terrain behind the beaches is a low but rough coastal plain, which gradually steepens inland. A road encircles the island, running within 1 mile of shore.

Two beaches, one near Yosui (*Reisui*) and the other on the southwestern coast of Cheju-do (*Saishū-tō*), are described in detail as beach areas (181) and (217), respectively.

A. Tsushima.

(Approximately 34°05'N to 34°43'N, and 129°09'E to 129°30'E)

(PLAN 17; FIGURE IV - 89; U.S.H.O. charts V3-27, V41/2-26, 0646, 2150, 2475, 2574, 2578, 3240, 5494, and misc. 10,010-17 to 10,010-22)

(1) Coast.

Bottom gradients around Tsushima* (U.S.H.O. chart 2574) are mainly steep; the 10-fathom line is about 100 feet to 1 mile

off shore, and the 20-fathom line from about 300 feet to nearly 2 miles off shore. The nearshore bottom consists of rock interspersed with patches of sand and shells; farther off shore, the bottom is composed of sand, shells, and mud.

Most of the coast is bordered by reefs and off-lying rocks. The coastline ranges from relatively straight to greatly indented. The coast consists mostly of slopes and cliffs which either rise directly from the water's edge, or are fronted by narrow strips of rock, boulders, cobbles, or sand. Narrow valleys, commonly with small alluvial patches at their mouths, lead inland at many places. The heads of the indentations generally are fringed by pocket beaches of sand or gravel. Villages lie behind most of the beaches, or short distances up the valleys. The villages are connected by roads or trails.

The inland terrain is largely a rugged forested upland consisting of steep irregular hills and mountains. Most of the mountains on Kamino-shima, the northern part of the island, are 500 to 1,000 feet high; on Shimono-shima, the southern part, the heights are 1,000 to 1,500 feet, with several peaks reaching elevations of 1,600 to 2,000 feet. Low, moderately rolling hills lie along the eastern side of Aso-wan (Asau-wan on PLAN 17), a bay which divides Tsushima at high water into 2 islands. Stream valleys are less than 5 miles long, and commonly have steep gradients. Most of the valley profiles are U-shaped, with steep sides. The only cultivated areas are small patches in the valley bottoms and on the lower, gentler hill slopes.

1*

The bottom gradient is chiefly steep; the 10-fathom line lies from 600 feet to 1 mile off shore, and the 20-fathom line from 3/8 mile to nearly 2 miles off shore. The bottom near shore consists of rocks alternating with patches of sand and shells.

The coast commonly is fringed by reefs and off-lying rocks. It is relatively straight and little indented. Long stretches of rocky cliffs, rising from the water's edge, alternate with steep slopes. In some places the slopes rise directly from the shore, but in others they are fronted by narrow strips of boulders and gravel. At several localities, particularly at the heads of the coves, the cliffs and slopes are broken by narrow valleys leading inland. Small alluvial flats are present at the mouths of most of the valleys. The heads of most of the coves are bordered by sand or gravel pocket beaches (beach area (129), TABLE IV - 18). Villages are located behind most of the beaches, or short distances up the valleys.

The inland terrain consists of steep irregular hills and mountains, the slopes of which are largely forested. Only small scattered plots in the valley bottoms and on the lower, gentler hill slopes are cultivated. The villages along the coast are connected by a foot trail.

Tsutsu-saki, at the southern extremity of this subdivision, is the end of a long narrow rocky peninsula which terminates in cliffs on its western side. The peninsula culminates in a hill 303 feet high about 3/4 mile behind the point. A drying reef, surmounted by a 12-foot rock, extends south-southwestward from Tsutsu-saki.

* In the description of Tsushima, Japanese place names are not italicized.

* Centered boldface numbers refer to coastal subdivisions numbered on strip maps, as on FIGURE IV - 89.

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COASTS AND LANDING BEACHES

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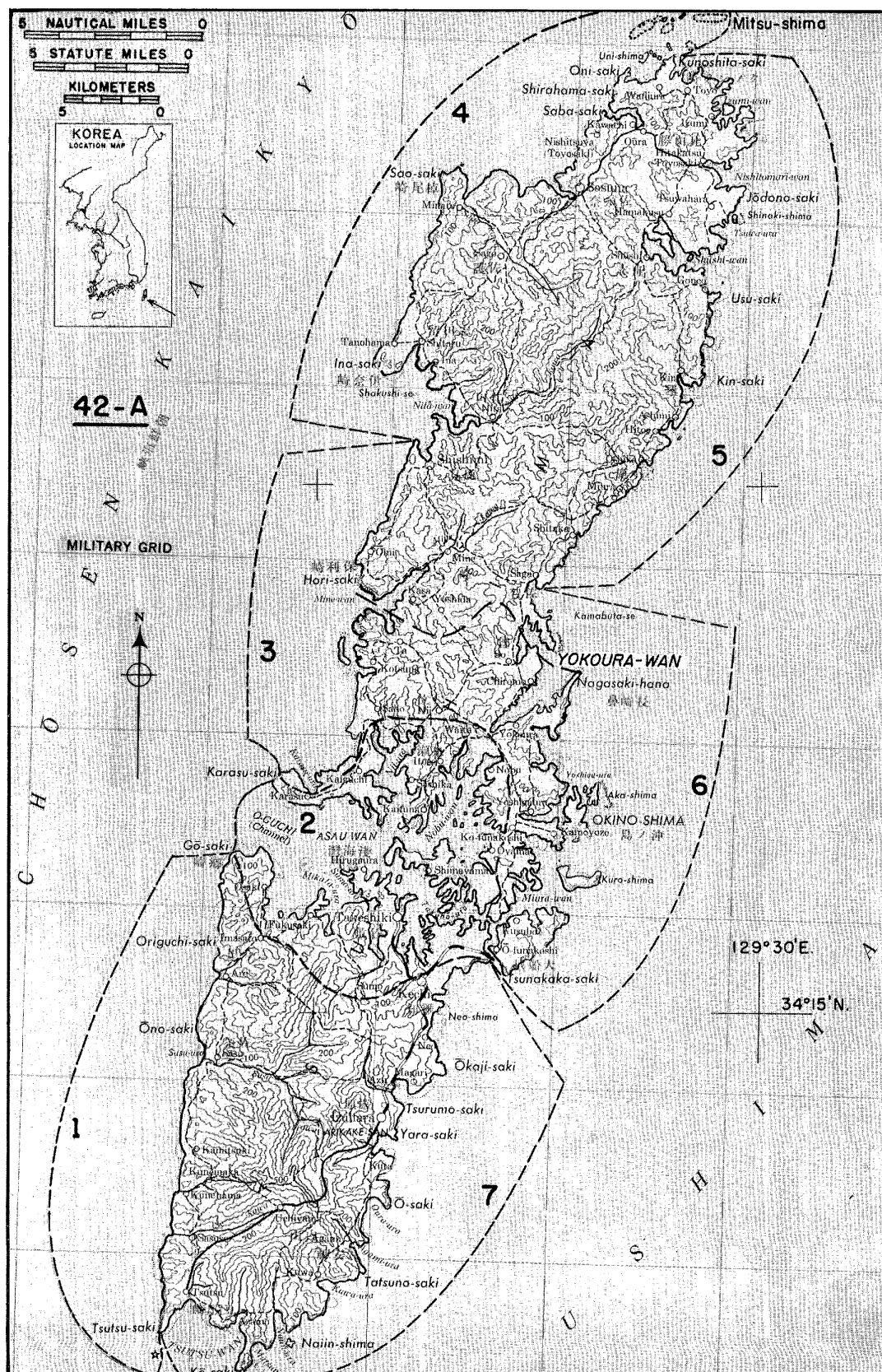


FIGURE IV-89. Coastal subsector 42 A.
Beach areas are shown on PLAN 17.

Gō-saki, about 14 miles north-northeastward of Tsutsu-saki, is the southern entrance point of Aso-wan (Asau-wan); Shiratake, a peak 1,711 feet high which is conspicuous from off shore, is $4\frac{1}{2}$ miles south-southeastward of the cape.

2

The bottom gradient in Aso-wan (Asau-wan on PLAN 17) (U.S.H.O. chart 0646) generally is *steep*, with the 10-fathom line lying from about 100 feet to $\frac{1}{2}$ mile off shore, and the 20-fathom line from about 300 feet to $\frac{3}{4}$ mile off shore. The bottom is composed of rock, sand, and shells, with a few scattered patches of mud.

The coastline is irregular and is deeply indented. Numerous reefs, shoals, and rocks fringe the coast; small mud or sand flats lie at the heads of some of the indentations. The coast consists largely of moderate to steep slopes rising directly from the water's edge, although stretches of rocky cliffs are present in places. Narrow valleys, with small alluvial flats at their mouths, lead inland from the bay heads. Information regarding beaches (beach areas (129) and (130)) is meager, but pocket beaches of soft muddy sand and pebbles probably lie at the heads of the indentations. The bay is studded with rocky islets which terminate in steep slopes or cliffs; some of the islets are wooded. Auxiliary anchorages are available at the northern end of Ōfunakoshi-seto, the eastern entrance to Aso-wan (Asau-wan), and in Takeshiki-kō (harbor), on the eastern side of Imo-saki, a peninsula extending from the south shore. A naval station is located on the western shore of Takeshiki-kō (harbor) (Chapter XIII).

The inland terrain consists of rugged forested hills and mountains, except along the eastern side of the bay, where the hills are relatively low and the slopes more moderate. A few villages are scattered along the shore, principally at the heads of the bays. Most of the villages are connected by foot trails. A road lies within $\frac{3}{4}$ mile inland along the southeastern shore of the bay.

Significant landmarks within Aso-wan (Asau-wan) include Jō-yama, a densely wooded hill with a reddish cliff on its western slope, which rises near the extremity of a promontory forming the eastern side of Ozaki-wan (Imaharu Bay on U.S. H.O. chart 0646); and Imo-saki, which is sparsely wooded with pine trees, and whose reddish cliffs are conspicuous from the westward.

3

The bottom gradient is mainly *steep*; the 10-fathom line lies from less than 100 feet to a little more than $\frac{1}{2}$ mile off shore, and the 20-fathom line from less than 100 feet to $1\frac{1}{8}$ miles off shore. The bottom near shore consists of rock and sand, with occasional patches of shells and mud.

The coast is fringed by numerous reefs and off-lying rocks. Tidal flats of mud and sand, as much as $\frac{3}{8}$ mile wide, are present in places, particularly between Karasu-saki, the northern entrance point of Aso-wan (Asau-wan) and Tsuna-wan, $4\frac{1}{4}$ miles north-northeastward. The shore is considerably indented, although most of the indentations are small. The coast consists of moderate to steep slopes, generally rising from the water's edge, except for short stretches of rocky cliffs north of the village of Tsuyanagi ($34^{\circ}29'N$, $129^{\circ}17'E$), south of Tō-saki ($34^{\circ}32'N$, $129^{\circ}18'E$), and at other places. The slopes are interrupted by narrow valleys, the largest of which

lead inland from Mine-wan. Small alluvial flats are located at the mouths of the larger valleys. Pocket beaches of sand or gravel (beach area (130)) are present at the heads of most of the coves and indentations. A few small fishing villages, connected by foot trails, are located on the alluvial flats behind the beaches.

The coast is backed by steep forested hills and mountains. Cultivation is confined to small scattered areas on the valley flats and lower hill slopes.

Landmarks in this subdivision are as follows: Tsuna-shima, a chain of 3 densely wooded islets terminating in steep slopes and cliffs and joined by rocky ledges, forms the western side of Tsuna-wan; Ko-shima, the northernmost and largest, is 206 feet high. Shin-saki, a low black cliffed point, marks the northern entrance to Mine-wan (U.S.H.O. chart misc. 10,010-18). Omae-saki, a headland about $1\frac{1}{4}$ miles north-northwestward of Shin-saki, culminates in a hill 336 feet high; a hill, Hori-yama, is about $\frac{1}{2}$ mile to the south-southeastward. Tō-saki lies at the extremity of a promontory which projects northward and terminates on its western side in conspicuous cliffs; directly east of the cliffs is a partly cultivated hill, 678 feet high.

4

Bottom gradients commonly are *steep*, with the 10-fathom line lying from less than 100 feet to $\frac{3}{8}$ mile off shore, and the 20-fathom line from about 300 feet to a little more than a mile off shore (U.S.H.O. chart 2574). The bottom near shore consists of rock and sand, with local patches of gravel, mud, and shells.

Most of the coast is fringed by reefs and off-lying rocks. Except for Nita-wan, a bay about 2 miles wide and having several arms, the numerous indentations along the coast are small. Short, narrow tidal flats composed of sand or gravel front the shore in a few places, particularly in Nita-wan. The coast consists of moderate to steep slopes interrupted in places by stretches of rocky cliffs, the longest of which occur around Sao-saki, the northwestern tip of Tsushima, and southwestward of Nishitsuya, which is about 4 miles east-northeastward of Sao-saki. The slopes rise directly from the shore, or are fringed by narrow strips of gravel and boulders which are as much as $1\frac{1}{4}$ miles long; the cliffs in general rise from the water's edge, but in places are fronted by narrow rocky shelves. Pocket beaches of sand and gravel (beach areas (127), (130), and (131)) are present at the heads of almost all the indentations. Narrow valleys, with small alluvial patches at their mouths, break the slopes at many points, especially at the heads of the indentations; these valleys are largest and most numerous around Nita-wan. Fishing villages, most of which are connected by foot trails, are located on the valley flats behind most of the beaches at the heads of the coves.

The terrain inland consists of steep irregular forested hills and low mountains which are cut by short valleys with steep gradients. Cultivated patches are confined to the valley bottoms and gentler hill slopes near the villages. A highway connects Sasuna ($34^{\circ}39'N$, $129^{\circ}24'E$) and Kawachi ($34^{\circ}40'N$, $129^{\circ}26'E$).

Ina-saki is a conspicuous headland forming the northern entrance point of Nita-wan (U.S.H.O. chart misc. 10,010-21); it is surmounted by grass- and tree-covered hills which reach

a height of 492 feet. There are port facilities in an inner inlet of Nita-wan (Chapter VI).

Sao-saki is about 6 miles north-northeastward of Ina-saki; it is 285 feet high. About $\frac{3}{4}$ mile eastward of Sao-saki is Myōjō-saki, the western entrance point of Sago-wan (U.S.H.O. chart misc. 10,010-22), an inlet which indents the coast about $\frac{1}{2}$ mile. The largest stream on Tsushima, the Sago-kawa, empties into the head of Sago-wan; the village of Minato lies on the west side of its mouth. Beaches (beach area (131)), fronted by drying sand flats, line the head of the inlet.

Conspicuous landmarks in the vicinity are Sembyōmaki-yama, a prominent grassy hill 949 feet high which is $1\frac{1}{8}$ miles east-southeastward of Myōjō-saki, and a hill surmounting Toroku-saki, a point about 2 miles eastward of Myōjō-saki.

Toroku-saki is the western entrance point of the inlet Sasuna-kō (U.S.H.O. chart misc. 10,010-18). The eastern entrance is marked by Tateba-saki, a conspicuous sharp peak covered with pine trees, which is $\frac{1}{2}$ mile east of Toroku-saki.

The entrance to the inlet Ōkawachi-wan, lying about $2\frac{1}{2}$ miles northeastward of Tateba-saki, is marked on the south by Sabaga-saki (Saba-saki), a precipitous point, and on the north by Shirahama-saki, lower and less prominent. About $1\frac{1}{2}$ miles east-southeastward of the latter point is the best landmark at the northern end of the island—Kōrei-yama, a conspicuous peak 642 feet high.

Oni-saki, a low, flat, wooded point, is located about $\frac{3}{4}$ mile northeastward of Shirahama-saki; $\frac{3}{4}$ mile farther northeastward is Uni-shima (U.S.H.O. chart misc. 10,010-20), a small hilly wooded island which terminates in cliffs and slopes, and which is surrounded by rocky reefs. Several rocks and cliffed islets lie northward and eastward of Uni-shima.

Mitsu-shima, about 1 mile northward of Maru-saki (Kunoshita-saki on PLAN 17), the northern point of Tsushima, is a group of 3 hilly islets and numerous rocks which are closely grouped and are joined by shoals. A chain of reefs, rocks, and rocky islets extends several miles east-northeastward and southward from the group.

5

The bottom gradient ranges from *moderate* to *steep*, with the 10-fathom line lying from a few hundred feet to $\frac{1}{2}$ mile off shore, and the 20-fathom line from $\frac{1}{4}$ mile to $1\frac{1}{2}$ miles off shore. The bottom near shore consists principally of rock, with a few patches of sand or mud.

The coast is fringed by numerous reefs, rocks, and short, narrow, discontinuous sand flats. The northern part of the coast is deeply indented by several large bays, but the remainder is relatively straight. The coast consists of moderate to steep slopes, alternating with short stretches of cliffs. The slopes and cliffs largely rise from the water's edge except at the heads of the indentations, where they commonly are fringed by pocket beaches of sand or gravel (beach area (127)). In some places, the coast is fronted by short, narrow strips of gravel and boulders. At the heads of most of the coves and bays, narrow valleys, with small alluvial flats at their mouths, lead inland. Several fishing villages, connected by foot trails, have been built on the flats.

The slopes and cliffs are backed by rugged forested hills and low mountains, cut by steep, narrow valleys. The valley flats and lower hill slopes around the villages are cultivated. A high-

way across the northern tip of the island connects Hidakatsu (Hitakatsu on PLAN 17) ($34^{\circ}40'N, 129^{\circ}28'E$) on the east coast with Kawachi on the west coast.

Saichōse-saki, about $\frac{1}{2}$ mile east-southeastward of Maru-saki (Kunoshita-saki), is a low, flat, wooded point that forms the western entrance point to Toyo-ura.

Toyo-ura is a small inlet backed by low wooded hills. Ko-shima, a thickly wooded islet close off the western shore, is a good landmark.

Naga-saki, the eastern entrance point to Toyo-ura, lies about $\frac{3}{4}$ mile east-southeastward from Maru-saki (Kunoshita-saki). The point, surmounted by a conspicuous hill which is sparsely covered with pine trees, is joined to the peninsula southward of it by rocks exposed at low water, but it becomes an islet at high water.

About 2 miles southeastward of Naga-saki is Shita-saki (U.S.H.O. chart 2578), the northeastern extremity of a peninsula joined to the mainland by a narrow isthmus, which separates Izumi-ura from Miuda-wan. Shita-saki has a flat top covered with pine trees. Lying in the middle of Izumi-wan is Shikoshima, a flat-topped densely wooded islet 105 feet high; from seaward the island appears to be part of the mainland because of the high land behind it. Port facilities exist in Izumi-wan (Chapter VI).

Ikazuchi-saki, about 2 miles south-southwestward of Shita-saki, is the northern entrance point of the inner part of Nishitomari-wan (U.S.H.O. chart misc. 10,010-17). About $\frac{1}{2}$ mile north-northwestward of the point is Gongen-yama, a thickly wooded hill 640 feet high; Tomi-yama, about $\frac{1}{4}$ mile northeastward of Gongen-yama, is 620 feet high. A wooded islet, 69 feet high, known as Ko-shima, lies about $\frac{3}{8}$ mile east-northeastward from Ikazuchi-saki. Many pocket beaches (beach area (127)) lie at the heads of small indentations within Nishitomari-wan, and there are port facilities within the bay (Chapter VI).

Shinaki-shima, a conspicuous wooded islet encircled by reefs on its seaward side, is located about $1\frac{1}{3}$ miles south-southeastward of Ikazuchi-saki. About a mile to the south-southwestward is Kochibō-shima, a small islet; it lies just south-eastward of a promontory on the northern side of Shūshi-wan, a bay which recedes about 2 miles to the northwest and is split into 2 arms at its head by a peninsula. There are small pocket beaches (beach area (127)) within the bay. The southern entrance point of the bay is marked by Zeni-shima, 2 off-lying islets on a reef.

Kin-saki, a small wooded point about $2\frac{1}{4}$ miles south of the southern entrance point of Shūshi-wan, is the eastern extremity of a peninsula which forms the north side of Kin-wan (U.S.H.O. chart misc. 10,010-22), a small bay. The southern extremity of the peninsula is Eboshi-saki ($34^{\circ}33'N, 129^{\circ}28'E$), a rocky point that rises steeply to a dark densely wooded hill 242 feet high; a black rock lies close off the point. The southwestern entrance point of the bay, which recedes about $\frac{3}{4}$ mile and has a small beach (beach area (127)) and a settlement at its head, is Asagi-saki, a low rocky point about $\frac{1}{2}$ mile southwestward from Eboshi-saki.

The coast southwestward about $6\frac{1}{2}$ miles from Kin-wan to Saga-wan is marked by thickly wooded hills; small beaches (beach area (127)) lie in minor indentations and at the mouths of small streams.

6

The bottom gradient is *moderate to steep*, with the 10-fathom line lying from 100 feet to 1/2 mile off shore, and the 20-fathom line from less than 1/4 mile to 2 miles off shore. The bottom near shore is rocky, with occasional patches of mud, sand, and shells.

Most of the coast is fringed by reefs, rocks, and off-lying islets and islands; short, narrow, discontinuous sand and mud flats are present in places. The coastline is deeply and intricately indented. The coast consists of moderate to steep hill slopes alternating with stretches of rocky cliffs. In most places, the slopes and cliffs rise directly from the water's edge, but at the heads of the indentations they commonly are fringed by pocket beaches of sand and gravel (beach area (128)). Steep, narrow valleys, the largest of which have alluvial flats at their mouths, lead inland from the coves and bays. A few fishing villages, connected by foot trails, are located along the shores of the indentations, mainly on the alluvial flats.

The inland terrain consists mostly of steep hills and low rugged mountains, which are forested and cut by short, narrow valleys. However, between the Kamoyoze peninsula (34°20'N, 129°23'E) and the southwestern corner of Miura-wan (34°18'N, 129°23'E), the hills are lower and more rolling. A few cultivated patches are present on valley flats and the lower hill slopes near the villages.

Yokoura-wan, a sizable bay with an arm extending to the northwest and another to the southwest, lies south of Chi-saki, a low conspicuous wooded point, encircled by cliffs, which forms the southern entrance point of Saga-wan (U.S.H.O. chart misc. 10,010-22). Small beaches (beach area (128)) are known to exist along the arm stretching to the northwest. The southern entrance point of Yokoura-wan is Nagasaki-hana, a point backed by a rounded grassy hill.

From Yokoura-wan southward about 6 miles to Miura-wan, the coast is much indented, and there are many islets, rocks, and reefs lying close off shore. The largest of the islets are Aka-shima, Okino-shima, and Kuro-shima; their coast and inland terrain are similar to that of the part of Kamino-shima off which they lie. Kuro-shima is surrounded by narrow drying tidal flats of mud and sand; its eastern extremity has a pointed summit, 450 feet high.

The shores of Miura-wan are, for the most part, nearly steep-to, but in places rocks and reefs lie within 600 yards of the shore.

Tsunakaka-saki, 2 1/2 miles southwestward of the southern entrance point of Miura-wan, is a cliffed point, with a black pillar-shaped rock close off its end; it is the northeastern entrance point of Kechi-wan, a bight about 3 miles wide.

7

The bottom gradient generally is *steep*; the 10-fathom line lies from a few hundred feet to nearly 1 mile off shore, and the 20-fathom line from 500 feet to 1 1/2 miles off shore. The bottom near shore consists of sand and shells with numerous rocky patches and areas.

The coast is fringed by reefs, rocks, and some off-lying islets. Small drying tidal flats composed of mud, sand, or gravel are present at the heads of most of the coves and inlets. The coast, made irregular by indentations of moderate size, consists of moderate to steep slopes alternating with stretches of rocky cliffs. Cliffs are particularly common along the promontories between the inlets. The slopes and cliffs largely rise directly from the water's edge except at the heads of the larger indentations, where most of them are bordered by pocket beaches of sand or gravel (beach area (129)). Narrow steep valleys lead inland from the larger indentations; small alluvial flats commonly are present at the valley mouths. Fishing villages and towns are located on some of the alluvial flats, behind the beaches, or short distances inland up the valleys. There are port facilities at Izuhara-kō (Chapter VI).

The coast is backed by steep, irregular forested hills and mountains, separated by deep, narrow valleys. Small plots around the villages are cultivated. Some of the villages are connected by foot trails. An improved road runs from Kechi (34°16'N, 129°19'E) to Izuhara (34°12'N, 129°17'E) and a highway extends inland across the southern end of the island from Izuhara to Tsutsu (34°07'N, 129°11'E).

The shores of Kechi-wan (Keti Wan on U.S.H.O. chart misc. 10,010-17) are characterized by numerous cliffs, and are indented by several small inlets. Ōfunakoshi-seto connects the northeastern side of the bay with the eastern part of Aso-wan (Asau-wan). Ōkaji-saki, the southern entrance point of Kechi-wan, is high and conspicuous, and is encircled by cliffs.

There are several other conspicuous landmarks. Marukumayama (Mashida Yama on U.S.H.O. chart 2150), a hill with a wooded summit 902 feet high, is 1 1/4 miles west-northwestward of Tora-saki (34°11'N, 129°18'E). Agami-saki (Tatsuno-saki) is a densely wooded headland, 444 feet high. Naiin-shima (U.S.H.O. chart misc. 10,010-19), a thickly wooded islet, is 2 3/4 miles southwestward from Agami-saki. Ikarikumayama, a sharp dark densely wooded peak, rises about 1/2 mile northeastward of the head of Naiin-wan (Naiin-ura). Kō-saki, the southernmost point of Tsushima, is the extremity of a small peninsula which has a pointed thickly wooded summit 763 feet high; Hoshinoko-shima, a rocky islet, is a short distance eastward of the peninsula.

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COASTS AND LANDING BEACHES

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(2) Landing beaches.

TABLE IV - 18
LANDING BEACHES OF COASTAL SUBSECTOR 42 A
Reliability FAIR. (PLAN 17)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(127) NE coast of Tsushima.	Obstructed by winding chan- nels and reefs.	Pocket beaches; average 0.1 mi; many shorter ones not shown.	25 to 50 ft.	1 on 10.	Surf light; most bights protected from all but direct waves.	Sand and gravel.	Backed by small steep valleys leading into rough hills.	Trails; road lies about 1 mi. inland of SW beaches; airfield at Sasuna (Ch. XIV, Table XIV-3); port facilities at Izumi-wan and Nishitomari-wan (Ch. VI).
(128) Central E coast of Tsushima.	Data lacking on this part of coast. Probably similar in number of beaches and other characteristics to stretch to north.							
(129) SE, S, and SW coasts of Tsushima.	Obstructed by winding chan- nels or reefs.	Pocket and strip beaches; average 0.2 mi.; many shorter beaches not shown.	25 to 50 ft.	1 on 10.	Surf generally light; heavy with winds dead onshore.	Sand and gravel.	Backed by small steep valleys leading into rough hills.	Trails; road lies inland of beaches on NE coast, and leads to SW tip of island; port facilities at Izuhara- kō (Ch. VI).
(130) NW coast of Tsushima.	Generally obstructed by reefs, narrow sand flats, and winding channels.	Pocket and strip beaches; average 0.1 mi.; many shorter beaches not shown.	25 to 50 ft.	1 on 10.	Surf generally moderate; heavy with winds dead onshore.	Sand and gravel.	Backed by small steep valleys leading into rough hills.	Trails; port facilities at Nita-wan (Ch. VI).
(131) Vicinity of Sao-saki.	Partly obstructed; channeled; boulders near shore.	Interrupted; total beach 3 miles.	25 to 50 ft.	1 on 10.	Surf heavy with N quad- rant winds.	Sand and gravel.	Backed by rough hills, small stream valleys.	Trails.

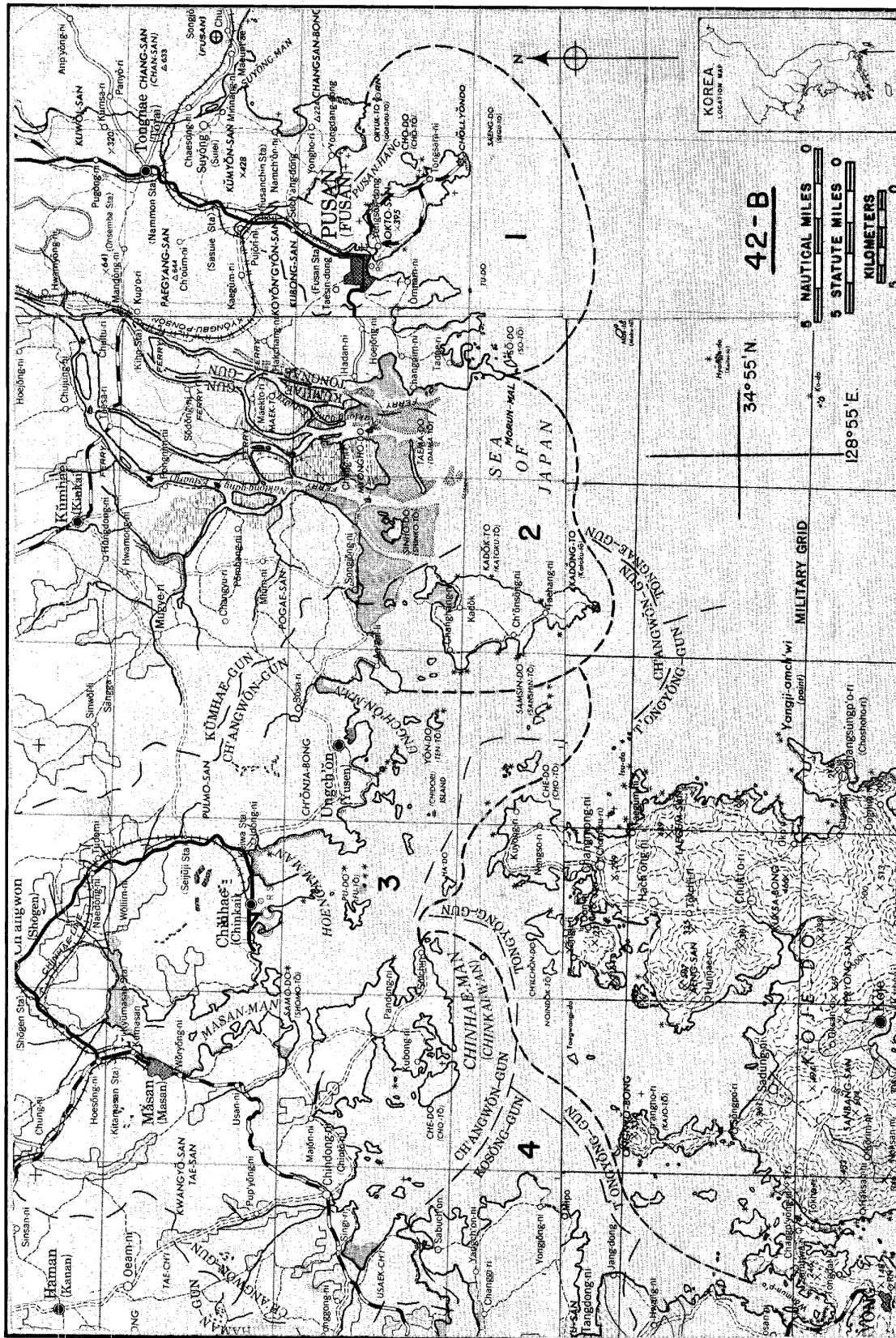


FIGURE IV - 90. Coastal subsector 42-B.

Beach areas are shown on PLANS 15, 18, and 19.

B. Sungdu-mal (*Yōtō-matsu*, Harito Kutsu) to the eastern entrance point of Wonmun-p'o.

(35°06'N, 129°07'E; 34°55'N, 128°26'E)

(PLANS 15, 18, and 19; FIGURE IV-90; U.S.H.O. charts V3-27, 2508, 3240, 3241, 3247, 5459, 5460, and 5494)

(1) Coast.

Bottom gradients in this subsector (U.S.H.O. chart 5494) range from *steep* to *gentle*, but largely are *moderate*; the 10-fathom line is about 500 feet to nearly 4½ miles off shore, and the 20-fathom line about ¾ mile to nearly 7½ miles off shore. The bottom near shore in most places consists of rock overlaid with patches of sand and shells; off the delta of the Nakdong-gang (35°04'N, 128°52'E), it is composed of mud with small areas of sand. The bottom off shore is made up of mud with patches of sand and shells.

Most of the coast is bordered by reefs, rocks, and off-lying islets and islands. Drying tidal flats of mud and sand are present off the mouth of the Nakdong-gang and at the heads of the larger bays and estuaries. The shoreline is made irregular by several large intricate indentations. The coast consists largely of moderate to steep slopes interspersed with stretches of rocky cliffs. The slopes and cliffs largely rise directly from the water's edge, but locally they are fronted by narrow beaches. At intervals, the hill slopes are broken by short, steep, narrow valleys. Along some stretches, narrow discontinuous coastal flats or alluvial pockets at the valley mouths front the hill slopes; at such localities, the coast is low and muddy or sandy. Around the mouths of the rivers, most of which empty into estuaries, the coast is low, level, and muddy or sandy; it is backed by alluvial plains extending inland up the river valleys.

Pocket beaches of sand or gravel line the heads of many of the coves, and short strip beaches of sand or gravel fringe the hill slopes in places. More extensive sandy beaches border some of the alluvial flats and plains.

Fishing villages and a few larger towns are located at the heads of some of the inlets or short distances inland. The largest cities are Pusan (*Fusan*), near the eastern end of the subsector, and Masan (35°12'N, 128°34'E), near the head of Masan-man.

The off-lying islets and islands are made up of partially wooded hills which terminate along the coast in steep slopes or cliffs. The heads of the coves commonly are fringed by pocket beaches.

The inland terrain consists of steep irregular mountains which are interrupted along the Nakdong-gang and at the heads of some of the larger indentations by alluvial plains. A small area of rolling hills with narrow valleys lies just west of the mouth of the Nakdong-gang. The mountains are partly forested and partly in waste brush or grassland. The alluvial areas are intensively cultivated. A highway leads northward from Pusan (*Fusan*). A highway or improved road extends from Chinhae (*Chinkai*) (35°09'N, 128°39'E) through Masan to Kosong (*Kojō*) (34°58'N, 128°19'E). The latter roughly parallels the coast at distances of a few hundred feet to 6 miles inland.

1

The bottom gradient is *steep* in places, but is largely *moderate*; the 10-fathom line lies from a few hundred feet to 2¼ miles off shore, and the 20-fathom line from about ¼ mile to

3¼ miles off shore. The bottom near shore consists of a mosaic of rock, sand, and mud.

Rocks and reefs fringe much of the coast, and there are several off-lying islets and islands. Narrow discontinuous drying flats of mud or sand border most of the indentations, and fill some of the smaller coves.

The coast is deeply indented. Around the head of Pusan-hang, at Pusan (*Fusan*) and along the northwestern part of Mok-to (Makino Shima), opposite Pusan (U.S.H.O. chart 5312), the coast is formed by artificial sea-walls backed by narrow coastal flats. Elsewhere, the coast consists largely of hill slopes which either rise directly from the water, or are fronted by narrow sand and gravel beaches. Stretches of cliffs are present in places, particularly along the ends and outer sides of the promontories, and along the southern and western sides of Mok-to. At intervals, especially at the heads of the coves, the slopes and cliffs are broken by small valleys with alluvial patches at their mouths. Pocket beaches of sand or gravel (beach areas (132) to (139), TABLE IV-19), lie at the heads of many of the indentations.

A narrow valley, floored with alluvium, leads inland along a small stream from the northern part of Pusan-hang (FIGURE IV-91). Elsewhere, the coast is backed by rolling to rugged hills and low mountains. Most of the ridges trend roughly north-south, with spurs extending down toward the shore. With the exception of Mok-to (Makino Shima) and Pusan, the vicinity of the city is almost devoid of trees. The hills are covered with a rank growth of grass which gives them a green appearance in summer, and a brownish, barren appearance in fall and winter. Rice and other grain crops are cultivated on the coastal flats and in the valleys. A highway leads northward from Pusan along the west side of Pusan-hang, a road leads westward from the town, and a foot trail parallels the northeastern side of the bay. An improved road borders most of the coast of Mok-to. There is an airfield 7½ miles northeast of Pusan (Chapter XIV, TABLE XIV-2).

Sungdu-mal (*Yōtō-matsu*, Harito Kutsu), the northeastern entrance point of the northern entrance to Pusan-hang, is a short, narrow, low point encircled by reefs. Five hilly islets, Oryuk-to (*Goroku-tō*, Black Rocks), terminating in cliffs, form a line about ½ mile long extending south-southeastward from Sungdu-mal.

Just east-southeastward of Pusan (FIGURES IV-92 and IV-93), which is a major port (Chapter VI), is Mok-to (Makino Shima) (FIGURE IV-94), a large island terminating mostly in cliffs along its western and southern sides, and in hill slopes along the northern and eastern sides. The northwestern tip of the island is an alluvial flat (FIGURE IV-95), and smaller alluvial pockets are present at the valley mouths elsewhere. The interior of the island is hilly to mountainous, Mokto-san (Kokkaru San) rising to 1,293 feet in the northwestern part.

There are several other conspicuous landmarks. Tungmodari-am (Tomutari Bao) lies off the northwestern part of Mok-to (Makino Shima); midway between it and Pubong-mal (Fuho Matsu), a point on the northern side of Pusan-hang, is Choe-ro (Uno Se). Cho-do (*Chō-tō*), a small island off the southern part of the east coast of Mok-to, culminates in a hill 462 feet high; steep cliffs line the northern and most of the eastern sides, and hill slopes fronted by a narrow sandy beach

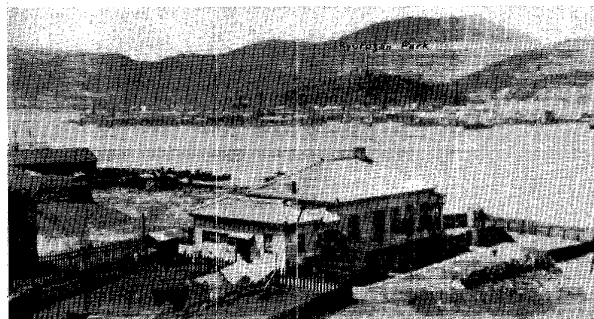
FIGURE IV - 91. *South coast. Near Pusan (Fusan).*

View northeastward from Choagudon toward Pusanjin (Fusanchin) and northern part of Pusan-hang. The coast has been altered since the photograph was taken by the construction of artificial sea-walls backed by coastal flats. 1925. Approximate position, $35^{\circ}07'N$, $109^{\circ}03'E$; U.S.H.O. chart 5312.

FIGURE IV - 92. *South coast. Pusan (Fusan).*

Panorama of the harbor at Pusan, looking northwestward at left across piers and loading platforms, to northeastward at right; photograph taken from the Rising Sun Petroleum Company grounds on Mok-to (Makino Shima), about 1,100 yards southwestward of Mundol-mal (Mondaku Kutsu). Approximate position $35^{\circ}05'N$, $129^{\circ}03'E$; U.S.H.O. chart 5312.

View west-northwestward toward Pusan from a point about 1,100 yards southwestward of Mundol-mal (Mondaku Kutsu) overlooking the Rising Sun Petroleum Company's installations on Mok-to (Makino Shima). Dark wooded hill in center background is Yongdusan-kongwon (Ryutozan Park). Approximate position $35^{\circ}05'N$, $129^{\circ}03'E$; U.S.H.O. chart 5312.



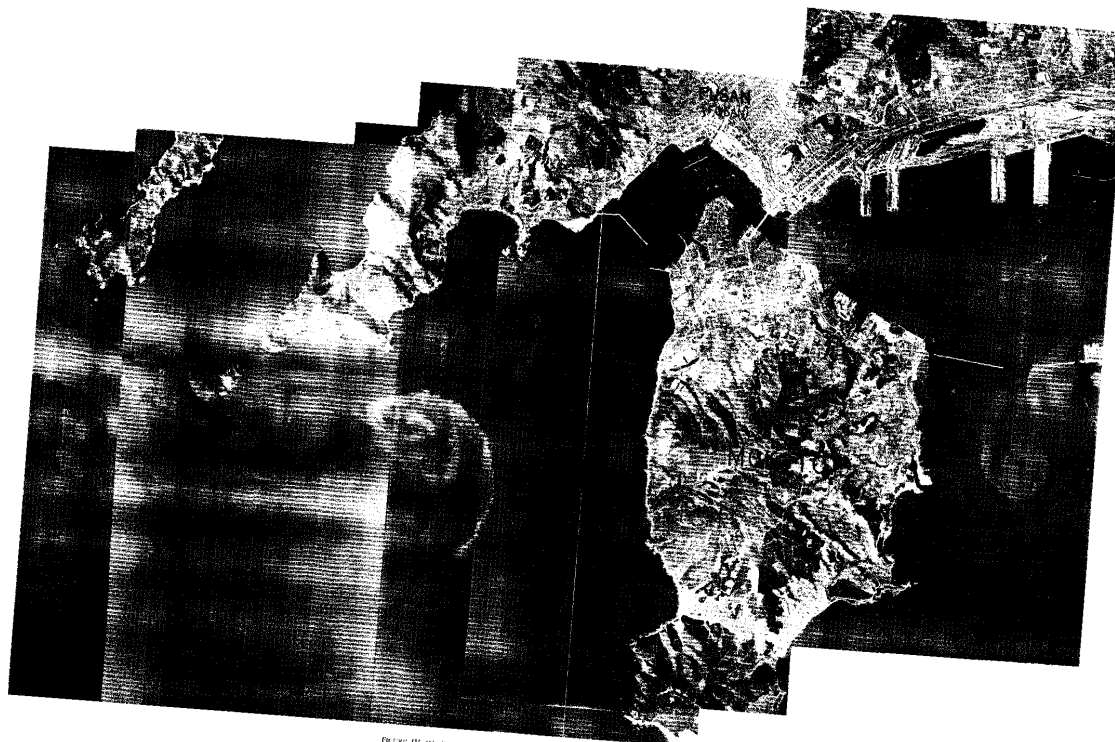


FIGURE IV-41
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FIGURE IV-41. South coast, vicinity of Pusan (Pusan) and Mokpo (Mokpo).
Beach area (138) and (139) to (138).
Part of coast in vicinity of Pusan (Pusan) and Mokpo (Mokpo).
A.A.E. 10000/10000, dated 17 November 1944.

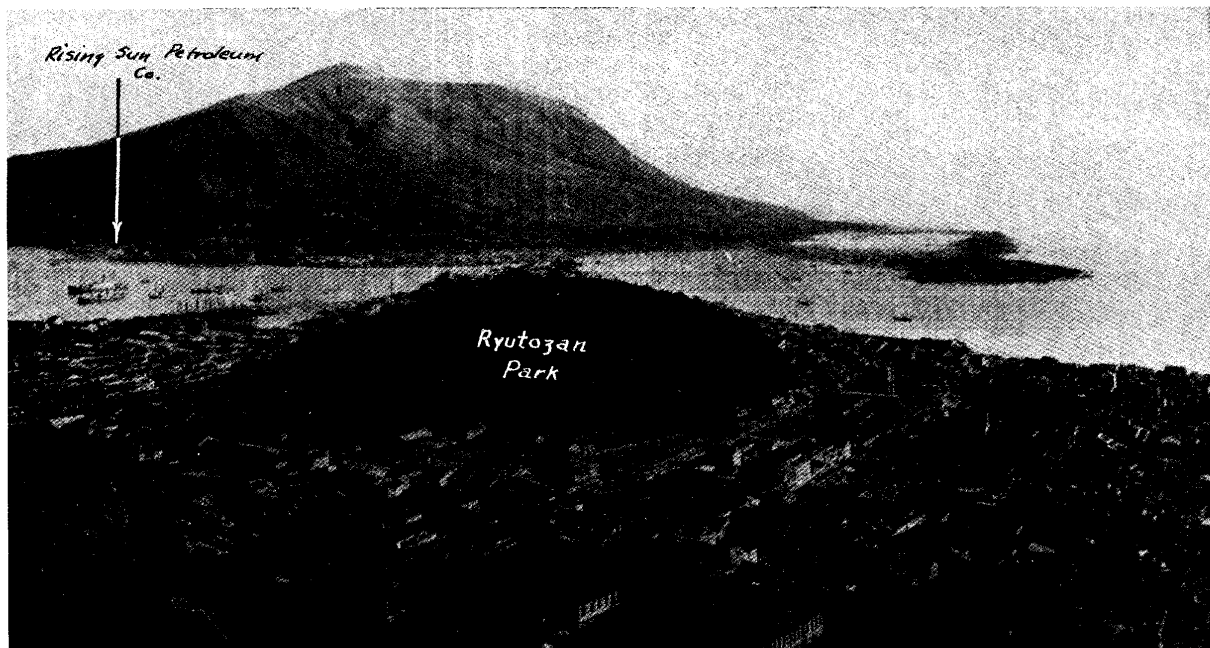


FIGURE IV-95. South coast, Pusan (Fusan).

View southeastward from Sobyong-san (Sapyeong San), a hill 584 feet high just north of Pusan, showing Yongdusan-kongwon (Ryutozan Park) in middle ground and alluvial flat forming northwestern tip of Mok-to (Makino Shima) at right background. Arrow indicates Rising Sun Petroleum Company's installations on Mok-to. Approximate position 35°06'N, 129°02'E; U.S.H.O. chart 5312.

(beach area (133)) form the western and southern sides. Sangi-mal (Sein Kutsu), the southwestern entrance point of the northern entrance to Pusan-hang, is a bold rocky headland 216 feet high. Saeng-do (*Sei-tō*, Segu To), a hilly islet 165 feet high, lies 1¾ miles south-southeastward of Mok-to. So-do (*So-tō*, Chiinamun To) (U.S.H.O. chart 5460) is a hilly grass-covered islet 315 feet high off Morun-mal (Morun Kutsu), the western extremity of this subdivision.

2

The bottom gradients range from *steep* to *gentle*. The 10-fathom line lies from a few hundred feet to more than 3 miles off shore, and the 20-fathom line from less than ¼ mile to 7 miles off shore. The bottom consists of mud with scattered patches of sand, shells, and rock.

Most of the mainland coast is fringed by broad drying mud and sand flats. Narrow flats of similar composition border the heads of the coves along the west and north sides of Kadok-to (Katoku Somu), near the western end of this subdivision. The east side of the island and the west side of the peninsula terminating in Morun-mal (Morun Kutsu), the eastern end of the subdivision, are fronted in places by reefs, rocks, and islets.

The coast is considerably indented. South and west of the Naktong-gang delta, the coast consists of moderate to steep hill slopes alternating with alluvial flats around the valley mouths. Short stretches of rocky cliffs are present locally. In places, both the hill slopes and the flats are fronted by short narrow beaches (beach areas (139) to (141) and (143)). Around the delta of the Naktong-gang, the coast is low, level, and muddy. Small areas of salt pans are scattered around and west of the river mouths. Hill slopes rising directly from the water

make up most of the coast line of Kadok-to, except along the east side of the island, which terminates in steep rocky cliffs. The hills and cliffs are interrupted by a number of small valleys with alluvial flats at their lower ends. The largest flat is located around the village of Kadok on the north side of the island. Pocket beaches of sand or sandy gravel (beach area (142)) are present at the heads of most of the coves.

The inland terrain south and west of the Naktong-gang delta and on Kadok-to consists of grass-covered hills, rolling to rugged, which are interspersed with small valleys. The delta of the Naktong-gang consists of several low, flat, marshy or swampy islets and islands surrounded by shallow sluggish distributary channels. The channels are separated off shore by drying mud or sand flats. A few small grassy hills as high as 116 feet rise from To-do (Tou To), one of the islands at the river's mouth. The islands are largely covered with grass or marshy reeds. The drier alluvial areas in this subdivision are planted to rice or grain crops. Fishing villages are scattered along the coast, especially at the heads of the indentations; most of the villages are connected by foot trails or unimproved roads. Ferries are operated across the eastern and western mouths of the Naktong-gang.

The peninsula terminating in Morun-mal (Morun Kutsu) is connected to the mainland by a narrow, low isthmus composed of sand (beach area (139)).

Several small islets lie between Kadok-to and the mainland west of the Naktong-gang delta. Sinho-do (*Shinko-tō*, Shimo Somu) is a marshy alluvial islet fringed by salt pans on its northern side, and by a sandy beach on its southern side (beach area (141)). The remaining islets are hilly, and rise in abrupt slopes from the surrounding tidal flats.

3

Bottom gradients range from *moderate* to *gentle* (U.S.H.O. chart 3247). The 10-fathom line lies from $\frac{1}{2}$ mile to $2\frac{3}{4}$ miles off shore, and the 20-fathom line from about $2\frac{1}{4}$ miles to $5\frac{1}{4}$ miles off shore. The bottom probably consists chiefly of mud, with some patches of rock, sand, and shells.

Drying mud and sand flats fringe much of the coast, particularly at the heads of the bays and coves; they are most extensive off the larger alluvial plains. The remainder of the shore is fringed by rocks and reefs.

The principal coastal indentations, from east to west, are Ungch'on-man (Unchen Wan), Haengam-man (Hoengam-man on PLAN 18), and Masan-man; the southern part of the large indentation leading through Masan-man to the city and port of Masan (Chapters VI and VIII), is known as Pudosudo (*Futō-suidō*). Many hilly islands and islets lie in the mouths of the indentations and farther off shore; they are concentrated particularly west of Kadok-to, and south and southeast of Ungch'on-man. At least one of them, Che-do (Cho Somu) ($35^{\circ}01'N$, $128^{\circ}44'E$), has possible landing places on its northern and western sides.

Along most of the coast, hills and low mountains rise in moderate to steep slopes or cliffs from the water's edge; in

places, especially at the heads of the indentations, the slopes or cliffs are fronted by narrow discontinuous sand or gravel beaches (beach areas (143) to (145)). At intervals, the hills are broken by narrow valleys with small alluvial flats at their mouths. Small alluvial plains, with low, level, muddy or sandy shores, are present around Ungch'on-man (Unchen Wan), along the eastern and northern sides of Haengam-man (Hoengam-man) (FIGURE IV-96), and around the small indentation west of Chinhae (*Chinkai*). Short stretches of low, sandy or muddy coast also fringe the mouths of 2 rivers which empty into the head of Masan-man. Ungch'on (*Yūsen*), Chinhae (*Chinkai*), and Masan are large settlements on the coast or short distances inland; the latter two are cities (Chapter VIII). Small fishing villages are scattered along the remainder of the coast; most of them are located at the heads of the coves and bays.

The inland terrain consists largely of low mountain ranges extending roughly parallel to the coast. Numerous irregular branching spurs, separated by steep, narrow valleys, extend seaward from the ranges. Two narrow river valleys, floored with alluvium, lead northwestward and northeastward, respectively, from the head of Masan-man; salt pans lie about $1\frac{1}{4}$ miles up the valley leading northeastward. Other valleys ex-

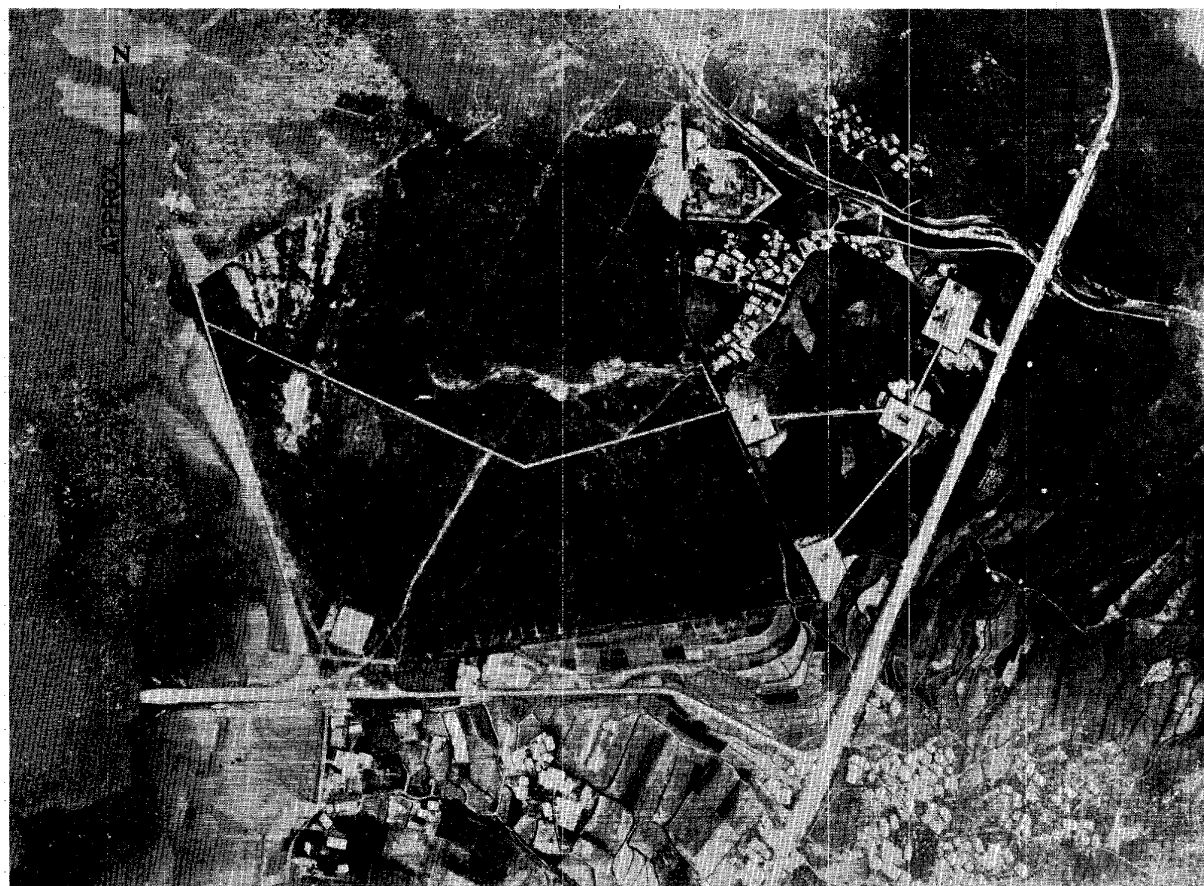


FIGURE IV-96. South coast. Southeast of Chinhae (*Chinkai*). Beach area (144). Part of coast along eastern shore of Haengam-man, about $2\frac{1}{2}$ miles southeast of Chinhae, showing air facilities (CHAPTER XIV). Approximate position $35^{\circ}08'N$, $128^{\circ}42'E$; U.S.H.O. chart 3247.

tend inland from the head of Ungch'on-man (Unchen Wan), and from the head of Kusan-gang (Kusan Chin) on the west side of Masan-man. The hills and mountains are covered with grass, and with scattered patches of scrub pines and pine trees. The alluvial flats around the villages, and the lower, gentler hill slopes, are largely cultivated in rice and grain.

Foot trails and unimproved roads extend around the coastal area. Chinhae (*Chinkai*) is connected with Masan by a highway which borders the coast in places, but in general lies several miles inland. An improved road leads southward from Masan.

A steep ridge culminating in Koch'ul-san (Kotchuri San), 671 feet high, separates Haengam-man from the bay west of Chinhae (*Chinkai*). An alluvial plain, on which the city of Chinhae is located, extends from the head of Haengam-man (Henamu Wan on U.S.H.O. chart 2508) to Chinhae-hang (*Chinkai-kō*), the harbor serving the city. Salt pans back the shore on the east side of the head of Haengam-man, and lie between the shore and the village of Toman at the head of Chinhae-hang. Chinhae-hang is used as a fleet anchorage and naval base (Chapter XIII).

The narrow entrance to Masan-man, known as the Gate, lies between Makkae-do (*Bakukai-tō*, Carpenter Rock), a small black rock 34 feet high, and Somo-do*, an island consisting of 2 hilly areas joined by a low saddle. Masan-man is largely surrounded by high rugged spurs which are separated by narrow valleys. There are port facilities (Chapter VI) and an airfield (Chapter XIV, TABLE XIV - 3) at Masan, a city built on a narrow alluvial flat fronting the mountains on the west side of the bay (FIGURE IV - 97).



FIGURE IV - 97. South coast. Masan.

View south-southeastward across Masan and harbor area toward Isimal (Ishimi Kutsu), point at left middleground. 1919 or earlier. Approximate position, 35°12'N, 128°34'E; U.S.H.O. chart 3247.

* Somo-do (Shomo-tō) on Plan 18; Somi Somu on U.S.H.O. chart 3247.

4

Bottom gradients off this subdivision (U.S.H.O. chart 3240) range from *steep* to *gentle*, but largely are *moderate* to *gentle*. The 10-fathom line lies from 200 feet to 7/8 mile off shore. No depths of more than 17 fathoms are shown on charts of Chinhae-man (*Chinkai-wan*). The bottom consists mainly of mud, with patches of rock, sand, and shells near shore.

Much of the coast is fringed with rocks and reefs. Drying mud flats fill the head of the small bay south of Sin'gi-ri (35°06'N, 128°27'E), and fill much of the narrow, shallow estuary south of Paedun-ni (35°03'N, 128°22'E). Smaller mud or sand flats fringe the heads of many of the smaller inlets. A number of off-lying hilly islets and islands lie in the bay between Kubong-ni (35°04'N, 128°34'E) and Sin'gi-ri.

The coast is greatly indented. It consists partly of steep to moderate slopes or cliffs which either rise from the water's edge, or are fringed by short narrow beaches (beach area (145)). The slopes and cliffs alternate with low, flat, muddy or sandy stretches. Pocket beaches of sand or gravel probably lie at the heads of many of the smaller indentations. Four towns, Chindong-ni (*Chintō-ri*) (35°07'N, 128°29'E), Paedun-ni, Kosong (*Kojō*) (34°58'N, 128°19'E), and Tangdong-ni (34°59'N, 128°24'E), and several fishing villages stand on the coast or short distances inland; most of them are located at the heads or along the shores of the inlets.

The slopes and cliffs are backed by steep rugged hills and mountains which are interrupted by numerous valleys. The sandy or muddy stretches front narrow strips of coastal alluvium or alluvial areas at the valley mouths. The largest alluvial flats lead inland along 4 rivers which empty just west of Chindong-ni, south of Sin'gi-ri, just west of Paedun-ni, and into the head of the inlet south of Paedun-ni, respectively. The hills and mountains are largely covered with grass, and with numerous patches of scrub pine and pine trees. The alluvial flats are planted to rice and dry crops. The lower, gentler hill slopes adjacent to the flats commonly are planted to grain.

An improved road runs southward from Masan to Kosong. The smaller villages are connected by trails or unimproved roads which parallel the coast or lie short distances inland.

The coast near the northeastern end of the subdivision, between Tarang-mal (Taro Kutsu) (35°05'N, 128°38'E) and Majon-ni (35°07'N, 128°32'E), and the coasts of the off-lying islands and islets, consist almost entirely of steep to moderate slopes, fringed by reefs; alluvial areas are few and small. At the southwestern end of the subdivision, the hill slopes behind the eastern and western entrance points of Wonmun-p'o terminate in steep rocky cliffs. The shores at the head of Wonmun-p'o are fringed by closely spaced rocks and reefs.

(2) Landing beaches.

TABLE IV - 19
LANDING BEACHES OF COASTAL SUBSECTOR 42 B
Reliability FAIR. (PLANS 15, 18, and 19)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(132) NE coast of Pusan-hang. (PLAN 15; FIG. IV - 78)	Obstructed.	3 beaches; average 0.5 mi.	75 to 100 ft.	1 on 20.	Surf light; moderate with SE winds.	Sand; fairly firm.	SE beach backed by wooded hills; NW beach backed by irrigated fields surrounded by hills.	Road 0.25 mi. inland from SE beach; unsurfaced road connecting NE with highway to Pusan backs NW beach.
(133) Cho-do and coast to W. (PLAN 15; FIG. IV - 94)	Partly obstructed; nearshore slope 1 on 60.	3 beaches, average 0.5 mi.	30 ft.	1 on 10.	Surf light; heavy with E winds.	Sand; some pebbles.	Hill slopes of island partly cultivated, partly forested.	Road backs west beaches within 500 ft.; trail crosses Cho-do.
(134) Vicinity of Chollyongdo (Chollyondo). (PLAN 15).	Clear.	0.1 mi.	20 ft.	1 on 5.	Surf moderate.	Pebbles.	Steep wooded hill slopes.	Winding road over hills begins 1,000 ft. inland.
(135) Coast SE of Mokto-san. (PLAN 15; FIG. IV - 94)	Partly obstructed.	3 beaches: 1 pocket beach, others 0.3 mi.	N beach 10 ft.; center 100 ft.	N 1 on 5; center 1 on 20.	Surf heavy with SE winds.	N beach sand and pebbles; center beach sand.	Backed by bluff and hills, except middle of center beach where access is directly to terraced fields.	Trails over hills (Road location on PLAN 15 not accurate).
(136) Coast W of Mokto-san. (PLAN 15; FIG. IV - 94)	Obstructed; fronted by continuous strip of boulders.	1 mi.	15 ft.	1 on 15.	Surf light.	Sand and pebbles.	Backed in most places directly by low bluff; locally by flat, 100 ft. wide.	Town at N on terrace top; in S only trails (PLAN 15 not accurate).
(137) Vicinity of Omnam-ni. (PLAN 15; FIG. IV - 94)	Partly obstructed; nearshore slope 1 on 70.	0.4 mi.; pocket beach to S.	15 ft.	1 on 15.	Surf light except with SE winds.	Sand and pebbles.	Hills with terraced cultivation; many buildings line shore on small flat.	Narrow road within 700 ft. leads to Pusan. (Fusan).
(138) Coast of small bay SW of Pusan. (PLANS 15 and 18; FIG. IV - 94)	Partly obstructed; approach channeled.	Small crescentic beaches; average 0.2 mi.	Average 15 to 25 ft.	1 on 15.	Surf generally light; heavy with S winds at head of bay.	Sand and pebbles.	Forested hill slopes; some terraced cultivation in valleys.	Road at head of bay; otherwise trails only.

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COASTS AND LANDING BEACHES

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TABLE IV - 19 *Continued*

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(139) Vicinity of Tadae-ri. (PLAN 18)	Partly obstructed.	Small cres- centic beaches; average 0.5 mi.	Average 15 to 25 ft.	1 on 15.	Surf generally light.	Sand.	Backed by steep forested hills; some terraced culti- vation on gentler slopes.	Road leads inland from head of bay; otherwise trails only.
(140) Vicinity of Changnim-ni. (PLAN 18)	Shoal, chan- neled; drying mud flat fronts beach.	0.6 mi.	25 to 30 ft.	1 on 30.	None.	Sand and mud; soft.	Swamp immediately be- hind beach; backed by rough forested hills.	Trails.
(141) Vicinity of Taema-do and Sinho-do. (PLAN 18)	Extensive shoals, drying flats.	E beach 1.8 mi.; W 0.5 mi.	E beach 200 ft.; W 150 ft.	1 on 30.	Surf belt 1 mi. wide or more; waves gener- ally small.	Sand; fairly soft.	Beaches are on sandy offshore bars fronting delta; connected to mainland by drying flats; land may now be reclaimed.	None.
(142) Kadok-to. (PLANS 18 and 19)	S beaches clear, but gradual nearshore slope; N beaches fronted by extensive shoals.	Small curved beaches; aver- age 0.5 mi.	25 to 50 ft.	1 on 15.	Surf generally light; moder- ate on SE.	Sand and pebbles.	Steep slopes of moun- tainous wooded island; some patches of terraced cultivation.	Trails.
(143) E coast of Ungh'on-man and to E. (PLAN 18)	Channeled approach; flat nearshore; mud- flats front N beaches.	Several beaches; aver- age 0.5 mi.	25 to 50 ft.	1 on 20.	Surf light.	Sand and mud.	Steep slopes; some ter- raced cultivation.	Unimproved road 1 mi. inland.
(144) Haengam- man. (PLAN 18; FIG. IV-96)	Channeled approach; dry- ing sand flats front beach.	E beach 2 mi.; W 0.4 mi.	25 to 50 ft.	1 on 20.	Surf light or absent.	Sand, prob- ably soft.	Hilly peninsula; prob- ably cultivated near shore.	Unimproved road within 0.5 mi. joins highway and railroad at head of bay leading to air facilities near Chinhae (Ch. XIV).
(145) Coast of Masan-man and peninsula to S. (PLAN 18)	Approach strongly channeled; partly obstructed.	Several beaches; aver- age 0.5 mi.	25 to 50 ft.	1 on 15.	Surf light or absent.	Sand, prob- ably soft.	Beaches at heads of small stream valleys leading back into rough hills.	Trails skirt shore to city of Masan.

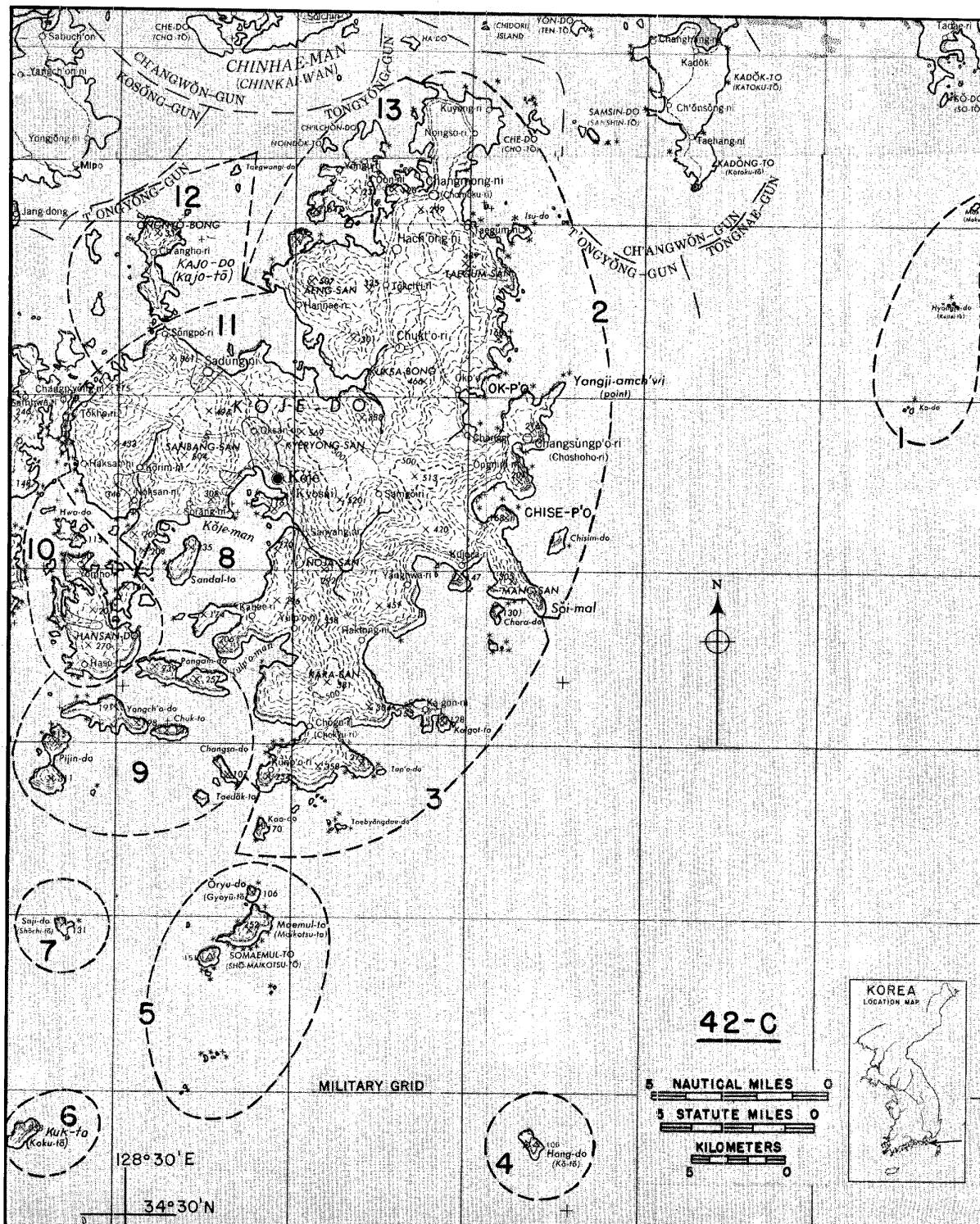


FIGURE IV - 98. Coastal subsector 42 C.
Beach areas are shown on PLANS 18 and 19.

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COASTS AND LANDING BEACHES

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C. Koje-do and adjacent islands.

(Approximately 34°30'N to 35°02'N, and 128°27'E to 128°46'E)

(PLANS 18 and 19; FIGURE IV - 98; U.S.H.O. charts V3-27, V3-36, 3240, 3247, 5459, 5460, and 5494)

(1) Coast.

Bottom gradients in this subsector (U.S.H.O. charts 3247 and 5459) range from *steep* to *gentle*; the 10-fathom line varies from less than 100 feet to 5 miles, and the 20-fathom line from a few hundred feet to nearly 7 miles, off shore. The bottom consists of mud, with patches of rock, sand, and shells which are most numerous near shore.

Reefs and rocks fringe the coast in most places; narrow drying sand flats border the heads of several of the indentations on Koje-do. The coast consists mainly of steep slopes and cliffs rising directly from the water's edge. Locally, the slopes are bordered by short, narrow sand or gravel beaches, and pocket beaches fringe the heads of most of the bays and coves. At intervals, the slopes and cliffs on the larger islands are interrupted by short, steep, narrow valleys; the principal valleys have small alluvial flats extending inland from their mouths. Numerous fishing villages and small towns are scattered along the coasts of Koje-do and the larger islands, but some of the islets are uninhabited. Koje (34°51'N, 128°35'E), on Koje-do, is the largest settlement. Most of the settlements are at the heads of the indentations or short distances inland.

The inland terrain consists of steep rugged hills on the islets, and of hills and mountains on Koje-do. The hills and mountains are grass-covered, with a few patches of scrub pine and pine trees. The valley flats are planted to rice and grain crops. The villages are connected by foot trails and unimproved roads, most of which parallel the coast.

1

Bottom gradients off these islets (U.S.H.O. chart 5460) are *steep*, with the 20-fathom line lying from 200 feet to 3/10 mile off shore. The bottom near shore consists of a mosaic of rock, sand, shells, and mud. The islets are hilly, and terminate in steep slopes or cliffs. They are covered with grass and scrub pines, and are uninhabited.

Mok-to (*Moku-tō*, Motto), 193 feet high, is partly encircled by rocks and reefs. Hyongje-do (*Keitei-tō*, Poguhoyuguja Somu) consists of 5 rocks, from 13 to 137 feet high; from a distance they have the appearance of 2 small islands. Ko-do (Namuhyoguja Somu) consists of 3 rocks; the largest, 81 feet high, has steep sides and a wooded summit.

2

Bottom gradients off this subdivision (U.S.H.O. charts 3247 and 5459) generally are *gentle* to *moderate*, but are *steep* in a few places. The 10-fathom line lies from a few hundred feet to 3¾ miles off shore, and the 20-fathom line from a few hundred feet to 6¾ miles off shore. The bottom consists of mud, with patches of rock, sand, and shells.

Much of the coast, especially at the heads of the indentations, is bordered by narrow drying sand flats; elsewhere it is fringed by reefs and rocks.

The coast is considerably indented. Cliffs and steep slopes rise from the water's edge in most places, but locally are bordered by short narrow beaches (beach areas (148) and (149),

TABLE IV - 20), particularly at the heads of the bays and coves. The longest stretches of cliffs occur along the promontories between the indentations. A few valleys with small alluvial patches at their mouths are present in places, but do not extend more than 1¾ miles inland. The fishing villages along the coast are located chiefly at the mouths of these valleys.

The terrain inland consists of steep ridges and low mountains. The vegetation consists principally of grass, with scattered areas of scrub pine and pine trees. The alluvial flats around the villages are planted to rice and grain crops. Foot trails and unimproved roads roughly parallel the coast and join inland with connections to the western side of the island.

Isu-do (Riko To on U.S.H.O. chart 3247), about ¼ mile off Koje-do, is reddish-colored and barren; it has a flat summit 257 feet high. There is a small beach (beach area (147)) on its southwestern side.

The principal bays in this subdivision are Ok-p'o (*Oku-po*) (U.S.H.O. chart 5459), lying just west of Yangji-amch'wi (Yanjiamu Kaku), the extremity of a low narrow peninsula, and Chise-p'o (*Chise-po*) (U.S.H.O. chart 3247), about 3½ miles southwestward of the point. Both have beaches (beach areas (148) and (149)) at their heads (FIGURE IV - 99).

The southern extremity of the subdivision is Soi-mal (Chifuri; U.S.H.O. chart 5459), a mountainous cape.

3

Bottom gradients off this subdivision range from *steep* to *moderate*. The 10-fathom line nearly coincides with the shoreline off the western side of Chora-do (Chijora To on U.S.H.O. chart 5459), an island about 1 mile west of Soi-mal, but lies as much as 1½ miles off shore in Mangch'i-p'o (Manji Po), about 1½ miles west-northwestward. The 20-fathom line lies from a few hundred feet to about 3½ miles off shore. The bottom consists of a mosaic of mud, shells, sand, gravel, and rock.

Most of the coast is fringed by reefs, rocks, and islets. Narrow discontinuous drying sand flats border the heads of the indentations.

The coast is indented by a large bay, Tojang-p'o (Tojan Po), lying between Soi-mal and Kalgot-to (Katsu To), and by several smaller bays and coves. At the heads of the indentations, moderate to steep slopes rise from the water's edge or are fronted by beaches (beach areas (149) and (150)) or narrow alluvial strips. The sides and ends of the promontories consist of almost unbroken stretches of rocky cliffs. Pocket beaches of sand or gravel commonly fringe the heads of the indentations.

The coast is backed by steep hills and mountains covered with grass and scattered pine woods. The hills adjacent to the coast are cut by narrow, steep valleys which extend inland a mile or less. The larger streams empty into the bays, and have small alluvial strips or patches around their mouths. A few fishing villages, connected by trails, are located on these flats, which are planted to rice or grain.

Tojang-p'o (Tojan Po), about 4 miles wide, contains 3 small bights, Kujora-p'o (Kujora Po) and Mangch'i-p'o (Manji Po) in the north, and Mo Ho to the southwest. There is a beach (beach area (149)) at the head of Mo Ho. In the entrance to Tojang-p'o is Oejora-do (Jora To), a rugged island about ½ mile southward of Chora-do (Chijora To).

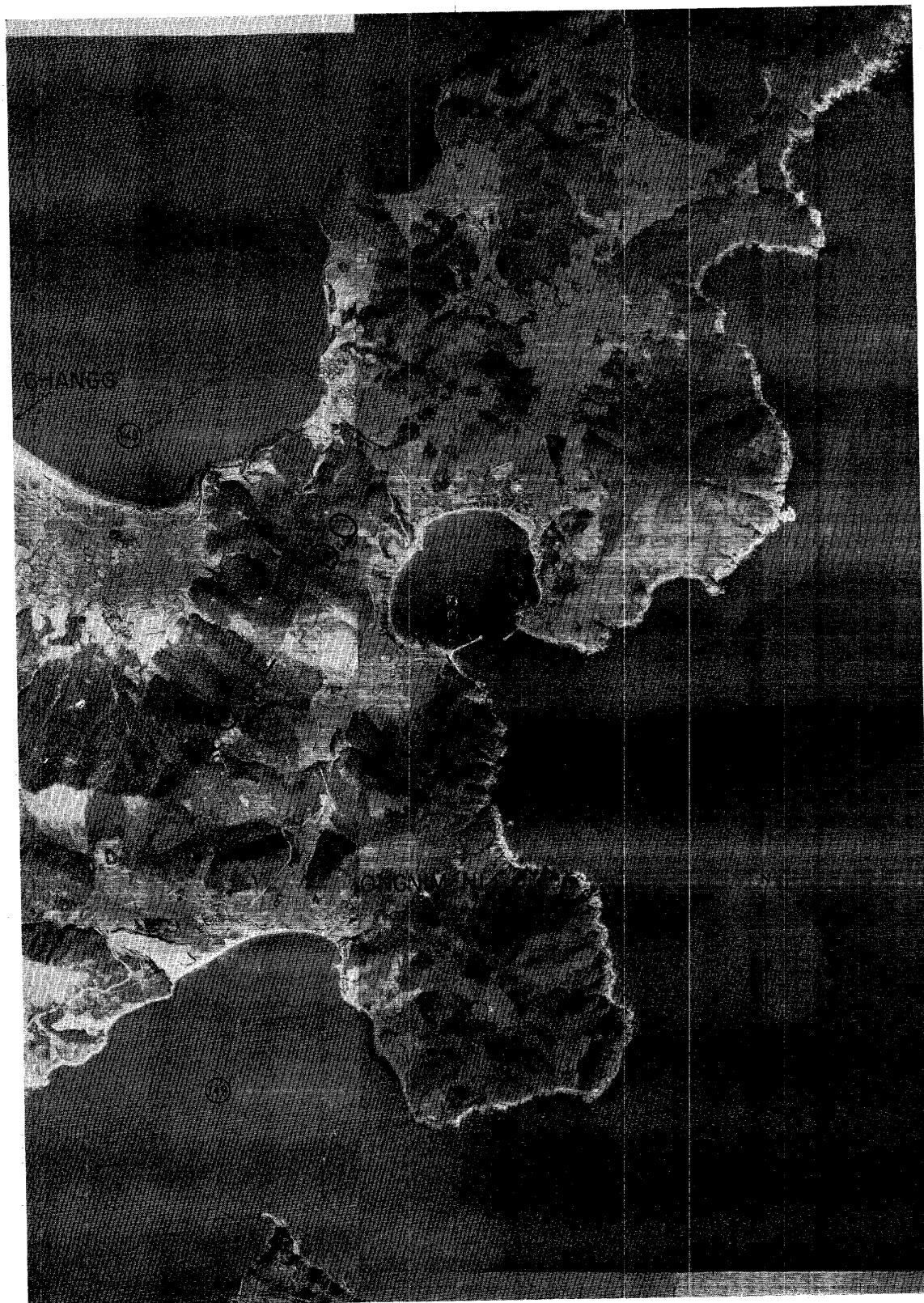


FIGURE IV - 99. South coast. Island of Kojedo. Beach areas (148) and (149). Coastal segment showing parts of beach areas (148) and (149); bays at upper left and lower left are Ok-p'o (Oku Po) and Chise-p'o (Chise-po), respectively. Approximate position of Ongnim-ni, $34^{\circ}51'N$, $128^{\circ}43'E$; U.S.H.O. chart 5459. A.A.F. 468BG/4MR22, dated 17 November 1944.

Tadae-p'o (Tadei Po) is an open bay to the south of Tojang-p'o (Tojan Po); a narrow mountainous ridge, Sujoe-bong (Muji Pon), lies between them. Saegam-mal (Cape Corbett), the southern entrance point of Tadae-p'o, is the southeastern point of Koje-do.

Other islands in this subdivision include Yo-do (Mori Somu, Jo To), 2 islets about 7 miles east-southeastward of Saegam-mal (Shokugan Matsu); Sojuk-yolto (Shochiku Retto), consisting of 6 large pointed rocks and several rocky heads, about 2 miles southwestward of Saegam-mal; and Kao-do (*Nankao-tō*), a hilly islet nearly 1 mile southward of Mangsan-kak (Bosan Kaku), a bold cliffed cape which is the southwestern point of Koje-do and the southwestern end of this subdivision.

Two small indentations between Saegam-mal (Shokugan Matsu) and Mangsan-kak (Bosan Kaku) have small beaches (beach area (150)) at their heads.

4

Bottom gradients off Hong-do (*Kō-tō*; Hon Somu on U.S. H.O. chart 5459) are *steep*, with the 20-fathom line lying $\frac{1}{8}$ mile or less off shore. The bottom near shore is rocky. Rocks and reefs extend about 200 yards northwestward from the islet, and about the same distance southwestward. The islet consists of a grassy ridge, 369 feet high at its summit, which terminates in rocky cliffs rising from the water's edge. There are no villages on the islet.

5

Bottom gradients are *steep*; the 10-fathom line almost coincides with the shoreline in some places, and lies as far as $\frac{1}{4}$ mile off shore in others. The 20-fathom line lies from a few hundred feet to $\frac{3}{8}$ mile off shore. The bottom near shore is rocky, with numerous patches of gravel, sand, mud, and shells.

The coasts of the islets (U.S.H.O. chart 5459) are little indented, and are continuously bordered by reefs and rocks. The larger islets consist of rugged hills which terminate in moderate to steep slopes and short stretches of cliffs. The smaller islets and rocks are partly or completely encircled by cliffs. Possible landing places exist on the pebbly beaches on both sides of the northern point of Maemul-to (*Maikotsu-tō*, Meimuru Somu), the largest of the islands. A few small, narrow valleys are incised in the hill slopes on Maemul-to and Somaemul-to (*Shō-maikotsu-tō*, Shomaifutsu To) about $\frac{1}{2}$ mile to the southwest. Two fishing villages are located on the western side of Maemul-to, and one on the western side of Somaemul-to. The islets are covered with grass and a few scattered pines.

Other islands and islets in the subdivision include Oryu-do (*Gyoyū-tō*), the northernmost islet, which has a flat top 347 feet high; a small unnamed islet, just south of Somaemul-to (*Shō-maikotsu-tō*), which has an almost perpendicular cliff along its southern side; Tunga-do (Toka To), a group of pillar-shaped rocks 123 feet high about 2 miles east-southeastward of Somaemul-to; Taeguulbi-do (Daikyuotsuhi To), a dark conical rock 261 feet high, about $2\frac{1}{2}$ miles southward of Somaemul-to; and Soguulbi-do (Shokyuotsuhi To), a flat-topped rock 139 feet high, about a mile farther southwestward.

6

Bottom gradients off Kuk-to* are *steep*, with the 20-fathom line lying from a few hundred feet to $\frac{3}{8}$ mile off shore. The bottom near shore consists of sand and gravel, with patches of mud and shells.

The coast is little indented, and is bordered by an unbroken reef and numerous rocks. The northern and eastern sides of the island terminate in steep rocky cliffs rising from the water's edge. The southern and western sides consist of moderate to steep slopes rising from the shore and interrupted by a few small valleys. A steep hilly ridge in the interior, covered with brush, reaches a summit 764 feet high. A small fishing village lies on the northwestern slope of the island.

7

Bottom gradients off Soji-do (*Shōchi-tō*) are *moderate to steep*. The 10-fathom line lies as far as 1,000 feet off shore along the north side of the islet, but the other shores are steep-to. The 20-fathom line is from about 600 feet to $\frac{1}{4}$ mile off shore. The bottom consists of sand, with patches of rock, mud, and shells.

The island is surrounded by a narrow fringing reef; there is a rock awash off the island's eastern extremity. The inlet on the northern side affords temporary shelter for small craft. Soji-do consists of a steep grassy ridge 429 feet high. Rocky precipitous cliffs line the western side of the island, but elsewhere the ridge terminates in steep slopes. The island probably is uninhabited.

8

Bottom gradients range from *steep* to *gentle*. Both the 10-fathom and 20-fathom lines lie from about 600 feet to several miles off shore. The bottom near shore consists mostly of mud, with patches of rock, sand, and shells.

Most of the coast is fringed by drying sand or mud flats, particularly at the heads and along the sides of the indentations. Some of the smaller bays and coves are filled by these flats. Some rocks and reefs border the coast for $3\frac{1}{2}$ miles north of Mangsan-kaku (Bosan Kaku), and at a few other places. There are some off-lying islets, which are most numerous in Koje-man (Chekutmu Po on U.S.H.O. chart 5459).

The coast is deeply indented by several bays, the largest of which is Koje-man (Chekutmu Po). Along most of the shore, moderate to steep slopes or cliffs rise directly from the water's edge. The cliffs are best developed along the sides and ends of the promontories between the bays. In places, particularly at the heads of the bights and coves, small valleys, with alluvial patches at their mouths, lead inland. Where the valleys are closely spaced, the alluvial patches have joined to form narrow coastal flats with low, level, sandy or muddy shores. Sandy pocket beaches (beach area (150)) fringe the heads of some of the coves.

The slopes and cliffs are backed by steep hills and rugged mountains, cut by short, steep, narrow valleys. The only extensive coastal flat occurs around the head of Koje-man (Chekutmu Po), where an alluvial plain extends as much as $1\frac{1}{8}$ miles inland. Vegetation on the upland consists of grass except for an extensive area of scrub pine along the shores of Koje-man, and on Sandal-to (Beaumont Island), lying in the bay. The

* Koku-to on PLAN 19; Kuku Somu on U.S.H.O. chart 5459.

alluvial flats are planted to rice and grain. Coastal fishing villages, connected by trails or unimproved roads, are located at the heads of the coves or short distances inland. Koje, the largest settlement on Koje-do, is located at the head of Koje-man.

9

Bottom gradients range from *moderate* to *steep*. The 10-fathom line lies from 100 feet to nearly 1 mile off shore, and the 20-fathom line from $\frac{1}{8}$ mile to $1\frac{1}{2}$ miles off shore. The bottom sediments near shore consist principally of sand, grading seaward into mud.

With the exception of Changsa-do (Choda To on U.S.H.O. chart 5459) and Taedok-to, about $\frac{3}{4}$ mile to the southwest, most of the islands are fringed with narrow drying mud and sand flats. Where there are no flats, reefs and rocks commonly border the shore.

The islands are hilly to mountainous. They chiefly rise from the water's edge in rocky cliffs, broken at some places by shorter stretches of steep slopes. Short, narrow, sandy beaches (beach area (152)) front the slopes in a few places, and are present at the heads of some of the coves. In a few localities, the cliffs and slopes are interrupted by steep, short, narrow ravines, with small cultivated alluvial patches at their mouths.

Fishermen's huts, in groups of 2 to 4, are scattered along the coasts of the islands. Chuk-to is covered with scrub pines and pine trees; the remaining islands are grass-covered, and have only a few small scattered patches of pine.

Pijin-do consists of 2 islands joined by a low narrow isthmus, on which there is a sandy beach (beach area (152)).

10

Bottom gradients off Hansan-do (*Kanzan-tō*) and adjacent islands are *moderate* to *steep* along the southern side of the island, where the 10-fathom line lies from 600 feet to 0.6 mile off shore, and the 20-fathom line from $\frac{3}{8}$ mile to $\frac{1}{4}$ mile off shore. Along the northern tip of the island, there are depths of 15 fathoms within 600 feet of the shore. Elsewhere, bottom gradients are *gentle*. The bottom consists of a narrow belt of sand adjacent to the shore, and of mud with a few patches of rocks or shells off shore.

The coasts of Hansan-do and the adjacent islands are considerably indented, and are almost continuously bordered by narrow drying mud and sand flats. Fringing reefs and rocks locally project above the drying flats, and line the coast where there are no flats.

The coasts consist largely of moderate to steep slopes alternating with cliffs. The longest stretches of cliffs occur along the northern, western, and southeastern sides of Hansan-do. Pocket beaches (beach area (151)) are present at the heads of some of the indentations on Hwa-do. In places the slopes and cliffs are interrupted by short narrow valleys with alluvial patches at their mouths.

The interior of the islands consists of rugged irregular hills, covered with grass and a few scattered pine groves. The alluvial patches are cultivated. Small villages, connected on Hansan-do by coastal foot trails, lie at the heads of some of the indentations and inland in the valleys.

11

Bottom gradients are chiefly *gentle*. As far north as Eclairer Point ($34^{\circ}55'N$, $128^{\circ}32'E$), the western entrance point to

Boulleur Bay (U.S.H.O. chart 5459), depths of 10 fathoms are attained only between Koje-do and Hansan-do (*Kanzan-tō*). In Boulleur Bay, the 10-fathom line lies from 600 feet to $1\frac{1}{4}$ miles off shore. Depths in Chinhae-man (*Chinkai-wan*), off Boulleur Bay, average about 12 fathoms. The bottom consists of mud and shells, with considerable sand and rock near shore.

Narrow drying mud or sand flats border the shore continuously as far north as the northern entrance to Hyonnaeryang-haehyop (Kenyanan Kaikyo), a strait off the western shore of Koje-do, and front a short stretch along the northeastern side of Boulleur Bay. Numerous off-lying rocks rise above the flats; elsewhere the coast is locally fringed by reefs and rocks.

The coast is deeply indented by Hadun-p'o (Deception Bay), about 1 mile westward of Koje-man (Chekutmu Po), and Boulleur Bay, but elsewhere there are only small coves and inlets. Moderate to steep slopes and cliffs rising from the water's edge alternate with low, level, sandy or muddy stretches. The principal stretches of cliffs occur west of Point Aride ($34^{\circ}55'N$, $128^{\circ}35'E$) and along the east side of Boulleur Bay. There are short strip beaches (beach area (151)) (FIGURE IV - 100) just west and northwest of Hadun-p'o, and a beach (beach area (146)) on the northeast side of Boulleur Bay. Pocket beaches fringe the heads of some of the coves.

The slopes and cliffs are backed by steep hills and low but rugged mountains, which are cut by short, steep, narrow valleys. The low stretches are backed by narrow coastal flats or by alluvial patches at the valley mouths. The largest alluvial flats lie at the head of Hadun-p'o (Deception Bay) and around Boulleur Bay. Vegetation on the uplands consists of grass with a few scattered pine trees, except for an extensive area of scrub pine around Hadun-p'o. The alluvial flats are planted to rice and grain.

Fishing villages are scattered along the coast. Most of them are built on the alluvial flats at the valley mouths, and are connected by trails or unimproved roads.

12

Bottom gradients off Kajo-do (*Kajo-tō*; Kamoku To on U.S.H.O. chart 5459) largely are *gentle* to *moderate*, but are *steep* in a few places. Along the northwestern, northern, and eastern sides of the island, the 10-fathom line lies from a few hundred feet to about $1\frac{1}{4}$ miles off shore, and no depths of more than 16 fathoms are shown on the charts. No depths of more than 10 fathoms are shown off the southwestern and southern sides of Kajo-do.

The coasts of Kajo-do (*Kajo-tō*) and the adjacent islets are moderately indented. They consist of moderate to steep slopes rising from the water's edge, with a few short stretches of cliffs at the ends of some of the points.

The slopes and cliffs are backed by rough-surfaced conical hills on Kajo-do (*Kajo-tō*), and by steep ridges on the 2 small islands to the west. The 2 conical hills which make up Kajo-do are connected by a low narrow ridge. The interior is grass-covered, with a few patches of scrub pine. A few cultivated plots are present around the fishing villages which are scattered along the coasts. Foot trails connect these villages.

13

Bottom gradients generally are *gentle* to *moderate*, but are *steep* in a few places. The 10-fathom line lies from a few hundred feet to nearly $1\frac{1}{2}$ miles off shore. No depths of more than

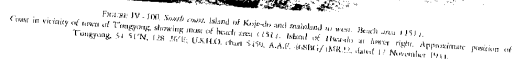


FIGURE IV-100
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COASTS AND LANDING BEACHES

Page IV - 115

19 fathoms are charted. The bottom consists of mud, with considerable sand, gravel, and rock near shore.

The coast is fringed in places, particularly at the heads of the many indentations, by narrow drying mud and sand flats; elsewhere, there are off-lying reefs and rocks. The coast consists chiefly of slopes or cliffs which rise directly from the water's edge. The principal stretches of cliffs occur along the headlands between the inlets. At intervals, mainly at the heads of the indentations, the slopes and cliffs are broken by short, steep, narrow valleys with small alluvial flats at their mouths. Pocket beaches of sand and gravel (beach area (146)) border the heads of some of the bays and coves.

The terrain inland is made up of steep irregular hills and low mountains. The uplands probably are mantled with grass and scattered pine trees. The alluvial areas are planted to rice and grain. Coastal villages and towns, connected by foot trails or unimproved roads, are at most of the valley mouths, or short distances upstream.

Ch'ilchon-do (Chiruchen To on U.S.H.O. chart 3247), a large island immediately westward of the middle of this stretch of coast, has a coastline and interior similar to that described above.

(2) Landing beaches.

TABLE IV - 20
LANDING BEACHES OF COASTAL SUBSECTOR 42 C
Reliability FAIR. (PLAN 19)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(146) NW coast of Kojedo.	Partly obstructed; approach strongly channeled.	Several beaches; 0.1 to 1.2 mi.	15 to 25 ft.	1 on 15.	Surf light or absent.	Sand, locally soft.	Steep hill slopes, probably partly under terraced cultivation.	Chiefly trails; unimproved road runs S from E part of beach area to ports on E.
(147) SW coast of Isu-do.	Partly obstructed by reef.	0.2 mi.	25 to 50 ft.	1 on 15.	Surf generally light; heavy with SE winds.	Sand and pebbles.	Steep slopes of small hilly island.	None known.
(148) NE coast of Kojedo. (Fig. IV - 99)	Generally obstructed.	Several beaches; average 0.6 mi.	25 to 50 ft.	1 on 15.	Surf moderate with E quadrant winds.	Sand and pebbles.	Steep hill slopes, partly under terraced cultivation.	Trails.
(149) E coast of Kojedo. (Fig. IV - 99)	Generally obstructed.	Several beaches; average 1 mi.	50 to 75 ft.	1 on 25.	Surf moderate with E quadrant winds.	Firm sand.	Beaches at heads of small, steeply sloping valleys, covered with terraced cultivation.	Road skirts most of shore; available from all beaches except those near Yangji-amch'wi; villages back beaches.
(150) S and SW coast of Kojedo.	Partly obstructed; approach channeled to NW beaches.	Pocket beaches; average 0.3 mi.	50 to 75 ft.	1 on 15.	Surf heavy on S; light on SW.	Sand and pebbles.	Backed by steep terraced hill slopes.	Trails; villages line beaches.
(151) Vicinity of T'ongyong. (Fig. IV - 100)	Generally obstructed; approach strongly channeled.	Strip beaches; average 0.5 mi.	25 to 50 ft.	1 on 20.	Surf light.	Sand.	Backed by terraced valleys dominated by wooded hills; diked fields directly behind beaches.	Generally trails; road parallels shore N from T'ongyong.
(152) Pijin-do, Yongch'o-do, and Chuk-to.	Partly obstructed; approach channeled.	4 beaches; each 0.4 mi.	25 to 50 ft.	1 on 15.	Surf moderate.	Sand and pebbles.	Steep slopes of hilly islands.	None known.

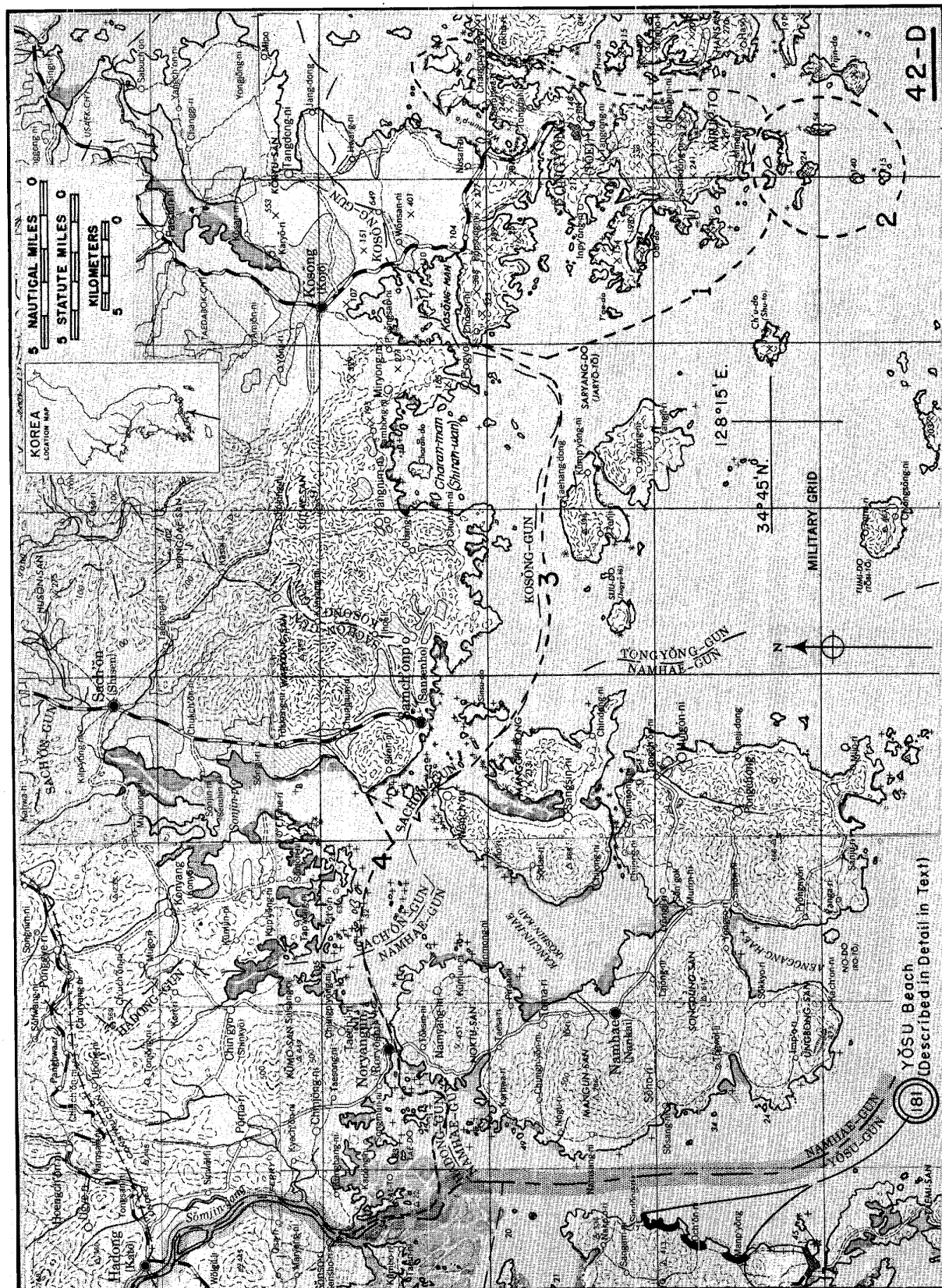


FIGURE IV - 101. Coastal subsector 42 D.
Beach areas are shown on PLANS 18, 19, and 21.

D. Eastern entrance point of Wonmun-p'o to mouth of the Somjin-gang (Sa Pu river).

(34°55'N, 128°26'E; 34°58'N, 127°46'E)

(PLANS 18, 19, and 21; FIGURE IV - 101; U.S.H.O. charts V3-27, 3240, 5457, 5458, 5459, and 5494)

(1) Coast.

Bottom gradients in this subsector (U.S.H.O. chart 3240) generally range from *gentle* to *moderate*, but are *steep* in places. The 10-fathom line is a few hundred feet to 11 miles off shore, and the 20-fathom line from $\frac{1}{8}$ mile to 25 miles off shore. The bottom near shore consists mainly of rock and sand, grading off shore into mud.

Drying mud or sand flats fringe much of the coast, especially along the western part of the subsector; elsewhere, reefs and rocks commonly border the shore. The coast is greatly indented, and is flanked by many off-lying islets and islands. In most places, slopes and cliffs, backed by rugged hills or mountains, rise directly from the water's edge; locally, especially at the heads of the indentations, the slopes are fronted by narrow pocket beaches. Low, level, sandy or muddy stretches, backed by alluvial plains, lie around Samch'ongp'o (34°56'N, 128°04'E), along the east side of Sonjin-p'o, and at various other localities.

Vegetation on the uplands consists principally of grass, with scattered patches of pine. The alluvial areas are planted to rice and grain. The largest settlements on or near the coast are T'ongyong (Toguyogu) (34°51'N, 128°25'E), Kosong (Kojō) (34°58'N, 128°19'E), Samch'ongp'o, Sach'on (Sbisen) (35°05'N, 128°05'E), and Noryangjin (Roryōshin) (34°57'N, 127°52'E); fishing villages are also scattered along the coast. Highways or improved roads connect T'ongyong and Kosong, extend northward along the east side of Sonjin-p'o, between Samch'ongp'o and Sach'on, and run northwestward from Noryangjin. Trails or unimproved roads connect the smaller villages.

1

Bottom gradients range from *steep* to *gentle*. The 10-fathom line lies from a few hundred feet to 4 miles off shore, and the 20-fathom line from $\frac{1}{10}$ mile to about 8 miles off shore. A narrow belt of sand and rock near shore grades off shore into mud, with patches of sand and shells.

Most of the coast is fringed with narrow drying sand flats, which are most extensive at the heads of the coves and bays. Rocks project above the flats in places, and reefs and rocks fringe the remainder of the coast. The shoreline is greatly indented. In most places, cliffs and steep slopes rise directly from the water's edge, or are fringed by short, narrow beaches (beach area (151), TABLE IV - 20, and beach area (157), TABLE IV - 21). The longest stretches of cliff occur along the large island, Miruk-to (Miroku To on U.S.H.O. chart 5459), south of T'ongyong. At intervals, the slopes and cliffs are broken by short, steep, narrow valleys with alluvial patches extending inland from their mouths. Most of the valleys terminate at the heads of the indentations. Many of the coves and inlets are bordered by narrow pocket beaches of sand or gravel.

The inland terrain consists of steep irregular hills and low mountains, mantled by grass and a few scattered pines. The alluvial flats and lower gentler hill slopes are cultivated in rice and grain. Fishing villages, connected by trails, are located on

the valley flats at the heads of most of the indentations. T'ongyong (Toguyogu) is the only large settlement (FIGURE IV - 100); it is connected with Kosong (Kojō), to the north-westward, by an improved road.

The islets lying off the coast are hilly, and terminate in cliffs or steep slopes. They commonly are encircled by sand flats or by reefs and rocks. Vegetation is similar to that on the mainland and Miruk-to (Miroku To).

From the head of Sinjon-p'o (Esperance Bay), the southernmost of 2 large inlets on the eastern side of Miruk-to (Miroku To), a valley extends westward. From a large inlet on the south side of Nam-wan (Nan Wan) and on the north side of Miruk-to, another valley extends southward and eastward. The heads of the 2 valleys are separated only by a low narrow ridge.

2

Bottom gradients are largely *moderate* to *steep*, with the 10-fathom line lying from a few hundred feet to nearly $\frac{1}{2}$ miles off shore, and the 20-fathom line from about $\frac{1}{10}$ mile to more than $\frac{1}{2}$ miles off shore. The bottom near shore consists chiefly of rock, sand, and shells, grading off shore into mud.

The coasts of the islands are fringed by narrow discontinuous drying sand flats, or by reefs and rocks. The islands consist of steep hills terminating in cliffs, or slopes which generally rise directly from the water's edge. In a few places, the hill slopes are fronted by short, narrow strips of cultivated alluvium, on some of which there are clusters of fishermen's huts. The hills are covered with grass and a few scattered pines.

Naebuji-do (Naifuchi To on U.S.H.O. chart 5459), about 3 miles south-southwestward of the southern extremity of Miruk-to (Miroku To), is a conical islet, 459 feet high, which has steep cliffed sides. Landings are possible on a small sandy beach on its northwestern side.

3

Bottom gradients are *flat* to *mild* in the eastern part, and *gentle* to *moderate* to the west; the 10-fathom line lies from $\frac{1}{2}$ miles to 8 miles off shore, and the 20-fathom line from 8 to $17\frac{1}{2}$ miles off shore. The bottom near shore consists of a mosaic of rock, sand, and mud, grading off shore into mud with patches of shells.

Many small discontinuous mud and sand flats fringe the coast, particularly along the smaller indentations; the remainder of the shore is bordered by reefs and rocks. The coast is indented by 2 large bays, Kosong-man (Kojo Wan) at the eastern end, and Charan-man (Sbiran-wan; Chaaran Wan on U.S.H.O. charts 5458 and 5459), and by many small coves and inlets. It consists chiefly of moderate to steep slopes alternating with shorter stretches of low, level, muddy or sandy shore. In places, the slopes rise directly from the sea, but more commonly they are fronted by narrow beaches (beach areas (158) to (161)). The western sides of 2 small promontories about $\frac{1}{2}$ miles east of Samch'ongp'o terminate in cliffs. Pocket beaches of sand or gravel lie at the heads of most of the indentations.

The slopes and cliffs are backed by steep irregular hills and low rugged mountains, which are cut by many ravines and valleys, most of them relatively short, steep, and narrow. The low, level, sandy or muddy stretches front alluvial flats or small plains at the mouths of the streams. The largest alluvial areas are on the eastern and northern sides of Kosong-man (Kojo

Wan) and around Samch'onp'o. The mountainous upland is covered with grass and scattered groves of scrub pine or pine trees. The alluvial flats are planted to rice and grain.

Kosong (*Kojō*) and Samch'onp'o are the principal settlements. Kosong lies at the head of Kosong-man (Kojo Wan), a shoal bay, but the main communication with the town is via Chinhae-man (*Chinkai-wan*), lying to the east. Fishing villages are scattered along the coast, generally at the heads of the coves. Improved roads connect Kosong with T'ongyong, and Samch'onp'o with Sach'on (*Shisen*); these highways roughly parallel the coast at distances of a few hundred feet to 2½ miles inland. The coastal villages are connected by foot trails.

Numerous hilly grass-covered islets and rocks, which terminate in steep slopes and cliffs, lie off the coast.

4

Bottom gradients range from *steep* to *flat*, but largely are *mild*. The 10-fathom line lies from about 500 feet to 7¼ miles off shore. A depth of 20 fathoms is shown only off the eastern side of the "Great Sand Bank" (U.S.H.O. chart 5458) off the mouth of the Somjin-gang (Sa Pu River). The bottom consists chiefly of mud and shells, grading shoreward into discontinuous strips and patches of sand.

The coast is deeply and intricately indented by several bays, the largest of which is Sonjin-p'o. Extensive drying tidal flats, composed of sand or mud, border most of the indentations, and fill some of the smaller inlets. The largest sand and mud flats lie off the east side of Sonjin-p'o, at the head of Chingyo-hang (Chinkyo Ko on U.S.H.O. chart 5458), and off the mouth of the Somjin-gang. Where there are no drying flats, rocks and reefs commonly fringe the shore.

The coast consists chiefly of gentle to steep slopes which commonly rise directly from the water; in places, particularly along the eastern side of the entrance to Sonjin-p'o, the hill slopes are fronted by narrow strips of sand or gravel (beach

areas (161), (162), and (175)). Short stretches of cliffs are present in a few places. The slopes are interrupted by relatively short stretches of low, level, muddy or sandy shore; these stretches are most extensive along the east side of Sonjin-p'o, where they are lined in part by earth embankments; they also occur at the heads of most of the coves. Pocket beaches of sand or gravel (beach areas (173) and (174)) also border the heads of some of the coves.

The slopes and cliffs are backed by rugged hills and low mountains. The low sandy or muddy stretches front alluvial flats at the mouths of ravines and valleys leading inland. On the east side of Sonjin-p'o, the flats at the mouths of the individual streams have coalesced in places to form small alluvial plains. The smaller valleys are short, steep, and narrow; the larger valleys are relatively deep and narrow, but have more gentle gradients and extend considerable distances inland. The hills and mountains are covered with grass, and with small scattered patches of scrub pine and pine trees. The alluvial flats are planted to rice and grain. Grain is also grown on some of the lower gentler hill slopes.

Sach'on (*Shisen*), near the head of Sonjin-p'o, and Noryangjin (*Roryōshin*) are the only large settlements, but fishing villages and smaller towns are scattered along the coast. Most of the settlements are located at the heads of the indentations. An improved highway leads along the east side of Sonjin-p'o, between Sach'on and Samch'onp'o, at distances of ½ mile to 2¾ miles inland. Another improved road extends inland from Noryangjin. The smaller towns and villages are connected by unimproved roads or trails.

Numerous off-lying hilly islets and rocks fringe this subdivision. Many of those near shore are encircled by drying tidal flats. The islets and rocks terminate in moderate to steep slopes, fringed at the heads of most of the coves by pocket beaches. Vegetation consists of grass or scrub pine.

Confidential

COASTS AND LANDING BEACHES

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(2) Landing beaches.

TABLE IV - 21
LANDING BEACHES OF COASTAL SUBSECTOR 42 D
Reliability FAIR. (PLANS 19 and 21)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(157) Miruk-to and coast to NW. (PLAN 19)	Generally clear; approach channeled.	2 beaches each 0.4 mi.; also small pocket beach on Miruk-to.	25 to 50 ft.	1 on 15.	Surf light.	Sand and pebbles.	Steep valleys.	Trails.
(158) Charan-man (Sbiran-uan) (PLAN 19)	Partly obstructed; islands channel approach.	7.8 mi. interrupted by rocky points; also small beach on Charan-do (Charaan To).	25 to 50 ft.	1 on 15.	Surf light.	Sand and pebbles.	Backed by hill slopes except in center, where 2 small rice-covered valleys lead 1 mi. inland.	Trail skirts shore.
(159) W from Charan-man (Sbiran-uan) (PLAN 19)	Generally obstructed.	Much interrupted strip beach, approx. 5 mi.	25 to 50 ft.	1 on 15.	Surf light.	Sand and pebbles.	Backed by hill slopes; some valleys in rice.	Trails within 0.25 mi. of shore.
(160) E from Samch'onp'o. (PLAN 19)	Obstructed; approach channeled; fronted by mud flats.	Much interrupted strip beach; approx. 4 mi.	25 to 50 ft.	1 on 15.	Surf light.	Sand and pebbles.	Alternate hills and flats in rice; flat 1 mi. wide at W end of area.	Improved road leads N along coast from Samch'onp'o to interior; trails back beaches.
(161) NW from Samch'onp'o. (PLAN 19)	Obstructed; approach channeled.	4 mi.	25 to 50 ft.	1 on 15.	Surf light.	Sand and pebbles.	Steep slopes rising to high mountain.	Trail skirts shore; improved road near both ends of beach area.
(162) SE shore of Sonjin-p'o. (PLAN 19)	Approach channeled; fronted by mud flat.	2 mi.	15 to 25 ft.	1 on 15.	Surf light.	Sand, pebbles, and mud.	Rice paddies on small flat.	Road 0.5 to 1 mi. from shore.
(173) Vicinity of Noryangjin. (PLAN 21)	Approach channeled; mud flat fronts beach.	0.5 mi.	50 to 75 ft.	1 on 30.	Surf light or absent.	Sand; probably soft.	Sandy flat, 600 ft. wide, backed by hill slopes.	Poor road to Noryangjin parallels beach within 500 ft.
(174) W of Noryangjin. (PLAN 21)	Approach channeled; obstructed; mud flat fronts beaches.	Several beaches; average 0.5 mi.	25 to 50 ft.	1 on 15.	Surf light or absent.	Sand and pebbles.	Hill slopes and narrow valleys.	Poor road to Noryangjin backs E beach; other beaches give access to trails.
(175) E side of mouth of Somjin-gang. (PLAN 21)	Approach channeled; beach fronted by wide sand and mud flat.	1.6 mi.	50 to 75 ft.	1 on 30.	Surf absent.	Sand; soft.	Swampy stream channel.	Trail.

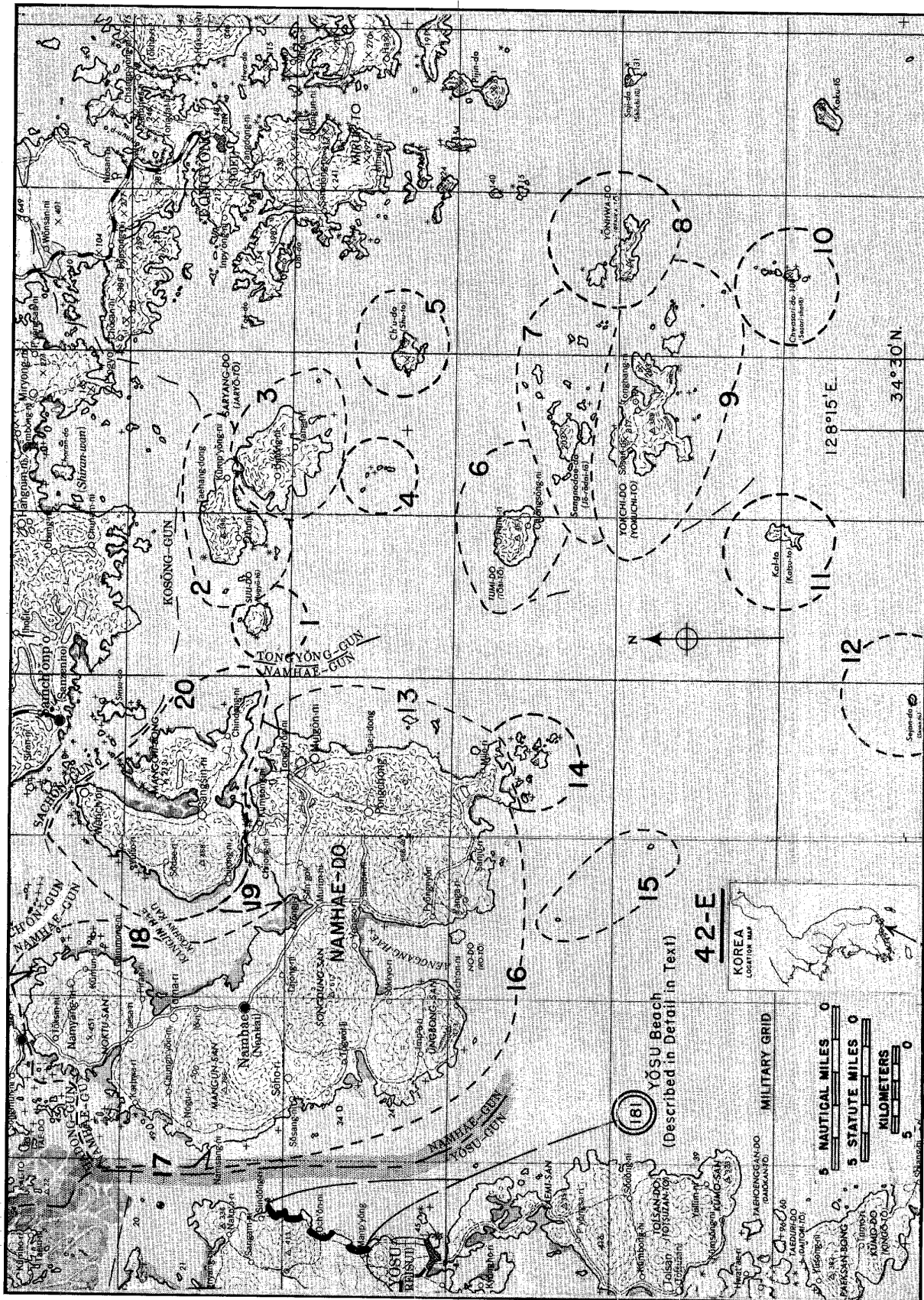


FIGURE IV - 102. Coastal subsector 42 E.
Beach areas are shown on PLANS 19 and 21.

E. Namhae-do (*Nankai-tō*), Ch'angson-do (*Shōzen-tō*), Saryang-do, Yonhwa-do, Yokchi-do, and adjacent islands.

(Approximately 34°30'N to 34°57'N, and 127°48'E to 128°24'E)

(PLANS 19 and 21; FIGURE IV - 102; U.S.H.O. charts V3-27, 3240, 5458, 5459, and 5494)

(1) Coast.

Bottom gradients off this subsector (U.S.H.O. charts 5458 and 5459) range from *steep* to *flat*, being most gradual around Namhae-do (*Nankai-tō*, Namuhei To). In some places, the 10-fathom line nearly coincides with the shoreline, but in others it lies as much as 4¼ miles off shore; the 20-fathom line lies from ½ mile to nearly 20 miles off shore south of Namhae-do. The bottom near shore consists chiefly of rock, gravel, and sand, grading off shore into mud with patches of sand and shells. However, in the larger embayments off Namhae-do, the bottom near shore is composed of mud.

The coasts of the islands are considerably indented. The large embayments on Namhae-do (*Nankai-tō*, Namuhei To) are fringed by drying mud and sand flats; elsewhere, the coasts are bordered by rocks and reefs. On Namhae-do and Ch'angson-do (*Shōzen-tō*, Chanson To), stretches of moderate to steep slopes, with some cliffs, alternate with shorter stretches of low, level, muddy or sandy shore. On the other islands, there are only a few short level stretches. The heads of some of the indentations are fringed by beaches.

The slopes and cliffs are backed by rugged hills and mountains, and the low stretches by alluvial flats. Vegetation on the uplands consists of grass, with small scattered groves of pine. The alluvial areas are planted to rice or grain. The only large settlement is Namhae, on Namhae-do (*Nankai-tō*), but fishing villages and smaller settlements are scattered along the shore. An improved road extends from the northwestern tip of Namhae-do through Namhae to Sinjon-ni, at the northeastern angle of Aenggang-man (Aenggang-hae on PLAN 21); the remaining settlements are connected by unimproved roads or trails.

1

The 10-fathom line virtually coincides with the shoreline off the southern side of Suu-do (*Jugyū-tō*; Suu To on U.S.H.O. chart 5458), but off the north-northwestern side of the island depths greater than 10 fathoms are not charted. The bottom near shore consists mainly of gravel, sand, and shells on the south side of the island, and of mud and sand on the north side.

The northern side of Suu-do is mostly fringed by narrow drying mud and sand flats. Steep slopes alternating with rocky cliffs rise from the water's edge along the south side of the island, but along the north side the slopes are more moderate, and are broken by small alluvial patches at the mouths of short, steep, narrow valleys.

The inland terrain consists of steep hills covered with grass and a few scattered pines.

2

The 10-fathom line lies from about ⅛ mile to ¾ mile off the southwestern, western, and north-central sides of Sang-do (*Jō-tō*; San Somu on U.S.H.O. chart 5458), but elsewhere depths of more than 10 fathoms are not charted.

The northern and southern sides of the island are fringed by narrow drying mud or sand flats; elsewhere, reefs and rocks border the shore. The coasts of the island consist of short stretches of gentle to steep slopes alternating with short strips of low sandy or muddy shore which lie mainly at the heads of the coves. Precipitous rocky cliffs are present along the western side of the island, opposite Nonggae-do (Rokai To), an islet between Sang-do (*Jō-tō*) and Suu-do (*Jugyū-tō*). Much of the coast is fringed by sandy beaches (beach area (156), TABLE IV - 22), especially at the heads of the indentations.

The slope and cliffs represent the seaward faces of spurs from a roughly T-shaped mountainous ridge in the interior. The low stretches are backed by alluvial flats which occupy the lower parts of the valleys between the spurs. The hills are covered with grass and scattered pines; the alluvial areas are cultivated. Three fishing villages, connected by trails, are located on or near the northern, southwestern, and southeastern parts of the coast, respectively.

Both Nonggae-do (Rokai To) and Chuk-to (*Chiku-tō*), about a mile to the southeast, are hilly grass-covered islets.

3

The 10-fathom line lies from 1/10 mile to about ¾ mile off the southwestern and eastern sides and the northern extremity of Ha-do (Ka To), but elsewhere depths of more than 10 fathoms are not charted.

The island is separated from Sang-do (*Jō-tō*) by Saryang-haehyop (Saaryan Kaikyo), a narrow shallow channel. The coast of Ha-do (Ka To) is considerably indented. In places, particularly at the heads of the inlets and along the shores of Saryang-haehyop, the coast is bordered by narrow discontinuous drying flats composed of sand or mud. Most of the remainder of the coast is fringed by rocks and reefs.

At the heads of the coves the coast is low, and generally is fringed by pocket beaches (beach area (155)); it is backed by small alluvial patches at the mouths of short, steep, narrow valleys. Elsewhere, the coast consists almost entirely of moderate to steep slopes which either rise from the water's edge or are fronted by narrow beaches (beach area (156)). The ridge forming the northern extremity of the island terminates in steep cliffs.

The slopes and cliffs are backed by steep hills covered with grass and a few pines. The alluvial patches are cultivated. The principal villages are located short distances inland in valleys on the western and southeastern sides of the island; the villages are connected by an inland foot trail.

Several small hilly grass-covered islets and cliffed rocks lie close off the western and southeastern sides of Ha-do (Ka To).

4

Bottom gradients around the group of islets and rocks known as Nammu-do (Yotsu Shima) are *steep*, with depths of 10 to 21 fathoms within a few hundred feet to ⅛ mile of the shore. The bottom sediments surrounding the group consist mainly of mud and shells.

The islets consist of grass-covered hills terminating in steep slopes or cliffs. Tacho-do (Daiko To), the southernmost and highest islet, is 78 feet high. There are no settlements on the islets.

5

Bottom gradients around Ch'u-do (*Shu-tō*) generally are *steep*. The northwestern side of the island is connected with Ha-do (Ka To) by a bank under depths of 10 fathoms or less; elsewhere, depths of more than 10 fathoms occur a few hundred feet to $\frac{5}{8}$ mile off shore.

The coast of the island is indented on a small scale. A few small drying patches of mud or sand fringe its southern and southwestern sides. Most of the coast consists of moderate to steep slopes and cliffs rising from the water's edge. In places, however, particularly along the small bights on the north-eastern and southeastern sides of the island, the hill slopes are fronted by narrow discontinuous alluvial flats.

The interior of Ch'u-do consists of steep grass-covered hills. Several villages, probably surrounded by small cultivated plots, are located along the coast.

6

The 10-fathom line practically coincides with the shoreline along most of the south side of Tumi-do (*Tōbi-tō*), but lies as far as $\frac{1}{8}$ mile off the north side and $\frac{1}{4}$ mile off the east side. Depths of 20 fathoms or more occur $\frac{1}{8}$ mile to $\frac{1}{2}$ mile off the northern and southern sides, but probably not elsewhere.

The island is encircled by reefs and rocks. Its coasts consist mainly of steep slopes rising directly from the water's edge. Short stretches of cliffs are present along the south side of Tumi-do, and along the western side of the small headland projecting from its southeastern extremity. In a few places on the northern and eastern sides of the island, the hill slopes are fronted by small alluvial strips at the valley mouths. Most of the alluvial strips are fringed by pocket beaches (beach area (154)), and a sandy stretch fronts the slopes on the northern side of the island.

The interior consists of a rugged grass-covered mountain ridge culminating in a summit 1,527 feet high. The flanks of the ridge are cut by a number of short, steep, blunt valleys. Several villages, connected by a coastal trail, are located on the valley slopes. The villages are surrounded by small cultivated areas.

7

Bottom gradients off Sangnodae-do (*Jō-rōdai-tō*; Utsunotei To on U.S.H.O. chart 5458) and adjacent islands are *steep*; the 10-fathom line almost coincides with the shoreline in some places, and lies as far as $\frac{3}{10}$ mile off shore in others. Depths of 20 fathoms or more are charted $\frac{1}{8}$ to $\frac{1}{2}$ mile off shore.

In a few places the coasts of the islands are fringed by small drying mud or sand flats, but mainly they are bordered by reefs and rocks. The coasts consist largely of steep slopes rising directly from the water. At the heads of some of the indentations, however, alluvial patches, fringed by pocket beaches (beach area (153)), front the hill slopes.

The slopes are backed by steep rugged ridges covered with grass and scattered pines. The ridges on the larger islands are cut by short, steep, blunt valleys, most of which lead inland from the heads of the indentations. Clusters of fishermen's huts, surrounded by cultivated plots, are scattered along the shores of the islands. Chok-to (Seki To) (U.S.H.O. chart 5459), the southeasternmost islets of this subdivision, consist of 2 rocky islets joined by a sandy spit; 2 rocks above water lie close eastward.

Pong-do (Ho To), about $\frac{1}{3}$ mile northwestward of Chok-to (Seki To), consists of a large islet on the south almost joined to a much smaller islet on the north by a rocky ledge. These islands are dark-colored and covered with scrub pine. The western side of the larger islet has a sand-and-gravel stretch which is a possible landing place.

8

Bottom gradients off Yonhwa-yolto (Yonhwa Retto; Yonfaa Retto on U.S.H.O. chart 5459) are *steep*; in some places the 10-fathom line practically coincides with the shoreline, but in other places lies as far as $\frac{1}{3}$ mile off shore. The 20-fathom line lies from about $\frac{1}{10}$ mile to nearly $\frac{1}{4}$ miles off shore.

The coasts of the islands are considerably indented, and are fringed by reefs and rocks. The islands consist of rugged hills which terminate in steep slopes and cliffs. The cliffs occur along the south-central and southeastern sides of Yonhwa-do (Yonfaa Somu on U.S.H.O. chart 5459). In general, the slopes and cliffs rise directly from the water, but at the heads of some of the indentations the slopes are fronted by small pocket beaches of sand or gravel. A small alluvial flat, fringed by a pocket beach (beach area (153)), lies at the head of an indentation on the northern side of Yonhwa-do; a still smaller alluvial patch is present at a valley mouth on the south side of U-do (So Somu), the small island just northwestward of Yonhwa-do. The hilly northeastern part of Yonhwa-do is joined to the remainder of the island by a low, narrow, sandy neck.

The hills adjacent to the coast are cut by several short, steep, narrow valleys. The hill slopes are grass-covered except for a small grove of pines southwestward of the alluvial flat on the north side of Yonhwa-do, and a few scattered deciduous trees on U-do (So Somu). Fishermen's huts, connected by foot trails, are located along the coast on the alluvial flats, and in the interior. Those on the alluvial flats and gentler hill slopes are surrounded by cultivated plots.

U-so (Komochi Gan), about 1 mile northeastward of U-do (So Somu), is a cluster of rocks, the largest of which is 45 feet high.

9

Bottom gradients off Yokchi-do (Yokuchii Somu on U.S. H.O. chart 5459) are generally *steep*. The 10-fathom line practically coincides with the coastline in some places, but in others lies as far as $\frac{1}{2}$ mile off shore. The 20-fathom line is 200 feet to nearly $\frac{1}{2}$ miles off shore.

The coasts of the islands are considerably indented. In places, particularly around the head of Tong-hang (Ton Han), a bay in the northeastern part of Yokchi-do, they are fringed by short, narrow, sand or mud flats. Elsewhere, they commonly are bordered by rocks and reefs. Most of the coasts consist of moderate to steep slopes or cliffs rising directly from the water. A stretch about 0.6 mile long, on the northern side of Yokchi-do, west of Tong-hang, consists of low bluffs and slopes fringed by a sandy beach (beach area (153)). The cliffs occur along the western and southern sides of Yokchi-do, and on the southwestern sides of the 2 small islands eastward from Yokchi-do. Around the heads of some of the indentations are small alluvial patches at the valley mouths; most of these patches are fronted by sandy pockets offering landing possibilities. The largest alluvial flat lies at the western extremity of Tong-hang.

Inland, rugged hills or low mountains are cut by several short, steep, narrow ravines. The hills and mountains are covered with grass and a few scattered pines and deciduous trees. The alluvial flats are planted to rice or grain. The principal villages are Sosan-ni, on the northwest side of Yokchi-do, and Tonghang-ni, at the western extremity of Tong-hang (Ton Han); these villages are connected by a trail which extends eastward around Tong-hang.

10

Bottom gradients off Chwasari-do (Chasaari Shoto on U.S. H.O. chart 5459) are *steep*; the shores are steep-to in a few places, but generally the 10-fathom line lies about 1/10 mile off shore; the 20-fathom line lies from about 1/8 to 1/4 mile off shore. The bottom near shore consists of patches of rock, sand, and shells, grading off shore into mud with some sand and shell patches.

The coasts of the group are encircled by reefs and rocks. The islets consist of grass-covered hills which largely terminate in steep slopes. The western and southern sides of the largest island, however, terminate mainly in steep rocky cliffs. The hill slopes on the eastern and southern sides of the largest island are cut by 3 small short valleys. The islets are uninhabited.

11

Bottom gradients off Kal-to (Karu To on U.S.H.O. chart 5458) are *steep*; in some places the 10-fathom line coincides with the coastline, but in others it lies as far as 1/5 mile off shore; depths of 20 fathoms are charted 1/8 to 3/16 mile off shore.

The island consists of 2 reef-encircled ridges connected by a low, narrow sand-and-gravel neck. The western side of the island consists of steep slopes rising directly from the water's edge; the 3 other sides terminate in steep cliffs, locally interrupted by slopes.

The ridges are grass-covered. A small fishing village is located on the northern slope of the southernmost ridge, just south of the narrow neck. A foot trail extends from the village northward along the summit of the island.

When seen from the eastward or westward, Kal-to appears to have 4 peaks. Off its southeastern extremity is a conspicuous pillar-shaped rock 205 feet high.

12

Depths of 10 fathoms or less extend 1/10 mile off the northern side of Sejon-do (Seijon To on U.S.H.O. chart 5458), but elsewhere off the islet there is deeper water.

Sejon-do, encircled by reefs, consists of 2 hills connected by a low saddle; the hills terminate in rocky cliffs, and the saddle in slopes. The islet culminates in 2 peculiarly shaped peaks which are distinct when seen from the northwestward, but which appear as one when seen from the northeastward. Two large caves give this islet the local name of Megane Iwa (Spectacle Rocks).

13

Bottom gradients off this subdivision are *gentle to moderate* except at the north and south extremities, where they are *steep*. The 10-fathom line lies from a few hundred feet to more than 1 1/2 miles off shore; depths of 20 fathoms or more are charted only at a distance of 2 miles or more southward of Tongp'ajong-mal (Tohatei Matsu on U.S.H.O. chart 5458), the east-

ernmost point of the peninsula at the southern end of the subdivision.

The coast is considerably indented on a small scale. In most places, particularly at the heads of the indentations, it is bordered by narrow discontinuous drying flats composed of mud or sand; elsewhere, reefs and rocks commonly fringe the shore.

All but short stretches of this coast consist of steep slopes rising directly from the water's edge. West of Mijo-ri, the southwestern side of Mijo-man (*Mijo-wan*), the bay just north of Tongp'ajongmal (Tohatei Matsu), the slopes are fronted by a narrow beach (beach area (166)). The northeastern side of the peninsula terminating in Tongp'ajong-mal is cliffed. At the mouths of the larger valleys, alluvial patches, bordered by sand-and-gravel beaches, break the coastal slopes; the largest patches occur at Mulgon-ni, Taeji-dong, and at the head of Mijo-man. On Tu-do (*Tō-tō*), an islet near the northern entrance point of Mijo-man, there is a small beach.

The terrain inland consists of low rugged mountains cut by short, steep, narrow valleys. In many places, the mountain slopes are scarred by small landslides. The mountains are covered with grass and scattered areas of scrub pine; the alluvial patches are planted to rice and grain.

Several villages, connected by foot trails or unimproved roads, are located on the alluvial flats along the coast. The largest settlement is Mulgon-ni.

14

Bottom gradients off Mijo-kundo (*Mijo-guntō*) are *moderate to steep*, with the 10-fathom line lying from a few hundred feet to nearly 1/2 mile off shore. Depths of 20 fathoms are charted only to the southward and eastward of the islands, at distances of 3/16 to 7/8 mile off shore.

Reefs and rocks fringe parts of the coasts of the islands, and a few drying mud or sand patches are present in places. The islands consist of grass-covered hills terminating in steep to moderate slopes; a short beach (beach area (166)) fronts the slopes on the western side of the largest island. The hills are cut by a few short, steep valleys. Clusters of fishermen's huts are located near the shore on the 2 largest islands.

15

Bottom gradients off Tae-do (Dai To on U.S.H.O. chart 5458) are *moderate*, with the 10-fathom line about 400 feet to 1/5 mile off shore, and depths of 13 to 14 fathoms beyond. Off Paek-so (Peku Nyo), the gradient is *steep*, with depths of 16 to 17 fathoms only a few hundred feet off shore. Both islets are encircled by reefs.

Tae-do (Dai To) consists of a hill, 307 feet high, which terminates in steep slopes; it is densely wooded with scrub pine. Paek-so (Peku Nyo) is a flat-topped rocky islet 77 feet high; it has a grayish color.

16

Bottom gradients off this subdivision are *moderate to mild*, but are largely *gentle*. The 10-fathom line lies about 300 feet off some of the headlands, but is as much as 4 1/2 miles off shore from the head of Aenggang-man (Aenggang-hac on PLAN 21), a large bay on the south side of the island. Depths as great as 20 fathoms are charted only in Yosuhaceman (Reisu Kaiwan on U.S.H.O. chart 5458), off the northern end of the

subdivision. The bottom near shore consists chiefly of sand and shells, grading off shore into mud.

The coast is indented by Aenggang-man (Aenggang-hae), and by numerous smaller bays and inlets. Except for relatively short stretches east and west of Aenggang-man, almost the entire coast is bordered by narrow drying sand or mud flats. Elsewhere, rocks and reefs fringe most of the shore.

The coast consists mainly of moderate to steep slopes rising directly from the water's edge or a short distance inland. In places, however, particularly around the heads of the indentations, narrow alluvial flats with low muddy or sandy shores front the hill slopes. Well-developed sand or pebble beaches (beach areas (166) to (170)) border most of the coast in this subdivision.

The terrain inland consists of rugged hills and low mountains, which are cut by many short, steep, narrow valleys adjacent to the coast. The alluvial flats are planted to rice and grain, but elsewhere the terrain is covered with grass and patches of scrub pine or pine trees.

Fishing villages, connected by trails or unimproved roads, are scattered along the coast; most of them are located on the alluvial flats at the heads of the coves and bays.

There are several conspicuous landmarks in the subdivision. Mok-to (Moku To), at the entrance to Mokto-man (Mokuto Wan), the double bay about 2 miles east of Aenggang-man, is an islet with a pointed summit, 242 feet high. Ojiam-ki (Goshigan Zaki), the eastern entrance point of Aenggang-man, rises abruptly to 419 feet. About 1½ miles north-northeastward from Ojiam-ki is Ch'onwang-san (Tenno San), a peak 1,170 feet high. No-do (Ro-tō) is an islet just within the entrance to Aenggang-man, and about ¼ mile off the eastern shore of the bay; its lower slopes are grass-covered. Sori-san (Seiri San) is a mountain, 1,593 feet high, which rises behind the western entrance point of Aenggang-man.

17

Bottom gradients range from *flat* to *moderate*, except off the northern coast in the channel, Noryang-sudo (Noryan Suido on U.S.H.O. chart 5458), where they are *steep*. The 10-fathom line lies from a few hundred feet to 1¾ miles off shore. Beyond the 10-fathom line, depths of 20 fathoms are shown only opposite the "Great Sand Bank" at the mouth of the Somjingang (Sa Pu River), northwestward of the middle part of the subdivision.

The coast is considerably indented. It is almost entirely fringed by drying mud and sand flats; the flats fill most of the indentations, extending to or beyond the ends of the intervening promontories.

The coast consists of steep slopes, rising from the water's edge, which alternate with shorter stretches of low, level, muddy or sandy shore. The low stretches lie mainly at the heads of the coves and bights, and in places are fringed by pocket beaches of sand or gravel (beach area (170)). A short stretch of cliffs is present about 1½ miles west of the eastern extremity of the subdivision.

The slopes are backed by rugged hills and low mountains which are cut by short, steep, narrow valleys adjacent to the coast. The low sandy or muddy stretches front small alluvial flats which lie at the mouths of the valleys or between the hill slopes and the shore.

The lower hills adjoining the coast are mainly covered with scrub pine, while the higher mountains inland are chiefly grass-covered. The alluvial flats and parts of the lower, gentler hill slopes are cultivated.

Fishing villages, mostly connected by trails, are scattered along the coast; the majority are located on the flats at the heads of the inlets. An improved road extends from Namhae (Nankai) northward to a point opposite Noryangjin (Roryōshin) on the mainland; the road is connected to Noryangjin by a ferry. North of Taesa-ri, this road leads along the coast or short distances inland.

18

Bottom gradients are largely *flat* except off the northern extremity of the subdivision, where depths of 10 fathoms are encountered 1/10 mile to ¾ mile off shore. Most of the remainder of Kangjin-hae (Kōshin-kai; Chinju Wan on U.S. H.O. chart 5458) has depths of less than 3 fathoms. Bottom sediments consist of sand and mud near shore, grading into mud with patches of shells off shore.

The coast has many small indentations. It is entirely fringed by drying tidal flats of sand and mud, which extend beyond the ends of the headlands between the indentations.

As far south as Toma-ri, the coast consists of moderate to steep slopes rising directly from the water's edge, which are interspersed with shorter stretches of alluvium at the heads of the indentations. Most of the alluvial flats are fringed by sandy beaches (beach area (171)). South of Toma-ri, most of the coast is low, flat, and muddy or sandy; it is backed by a narrow alluvial plain which is interrupted by several small isolated hills and by spurs from the mountainous interior. At several localities, the hills and spurs rise in moderate to steep slopes from the shore.

The terrain inland, as far south as Toma-ri and behind the alluvial flats south of Toma-ri, consists of low rolling hills which give way sharply to the high rugged mountains of the interior. The hills and mountains are cut by numerous valleys, most of which are relatively short, steep, and narrow.

The alluvial flats are planted to rice and grain; grain also is cultivated on many of the lower, gentler hill slopes. The steeper slopes and mountains are covered with grass and scrub pine.

Numerous settlements, the largest of which is Namhae (Nankai), are scattered along the shore and on the slopes near the alluvial flats. An improved road extends from Murim-ni, at the southern extremity of Kangjin-hae, northward through Namhae to the northwestern tip of Namhae-do (Nankai-tō). In places, the road borders the coast, but in others it lies as much as 1½ miles inland.

19

Bottom gradients are *moderate* to *mild*; depths are shallow except off the eastern end, where 9 to 10 fathoms are charted about 3/10 mile off shore.

The coast is indented on a small scale. Drying mud and sand flats fringe the coast except for the easternmost mile, which is bordered by reefs. These flats fill the narrowest part of Ch'angson-haehyop (Chanson Kaikyo on U.S.H.O. chart 5458), the channel between Namhae-do (Nankai-tō) and Ch'angson-do (Chanson To), the island to the north.

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At several places, steep to moderate slopes rise directly from the water, but elsewhere the slopes are fronted by narrow coastal flats, or are interrupted by alluvial patches at the valley mouths. The largest alluvial patches occur at the heads of the coves and bights; most of them are fringed by sandy pocket beaches (beach area (165)). A short stretch of cliffs is present 2¼ miles west of the eastern extremity.

The coastal slopes and cliffs and the alluvial flats are backed by relatively low and rolling hills along the western third of the subdivision; elsewhere, the hills are steep and rugged. The hills are covered with grass and scrub pine. The alluvial areas and the lower, gentler hill slopes are cultivated. Several fishing villages, connected by foot trails, are scattered along the coastal flats.

20

Bottom gradients off the western and southern sides of Ch'angson-do (Chanson To) are largely flat; they are steepest off the northwestern, northeastern, and southeastern coasts, where depths of 10 fathoms are charted 1/10 to 7/8 mile off shore.

Almost the entire coast, except at the southeastern extremity of the island, is fringed by drying mud and sand flats. These flats fill the large inlet in the north side of the island, the nar-

rower part of the strait south of the island, and the southern part of Kangjin-hae (*Kōshin-kai*, Chinju Wan); elsewhere, the flats are relatively narrow. The southeastern part of the island is fringed by reefs.

Most of the coast consists of moderate to steep slopes rising directly from the water. In places, however, the slopes are fronted by narrow strips of low sandy or muddy alluvium; the longest of these strips fringes the western side of the large inlet in the northern part of the island. At numerous other places, the slopes are broken by alluvial flats at the valley mouths; most of these flats lie at the heads of the indentations, and are fringed by sandy pocket beaches (beach areas (163) to (165)). The largest alluvial flat extends across the narrowest part of the island, between Ch'angson-hachyop (Chanson Kaikyo), the strait to the south, and the large inlet to the north.

The coastal slopes and alluvial areas are backed by rolling to rugged hills and low mountains. The hills and mountains are covered with scrub pine and grass, but the alluvial patches are planted to rice and grain. Fishing villages and small towns, connected by foot trails, are scattered along the coastal flats.

(2) Landing beaches.

TABLE IV - 22
LANDING BEACHES OF COASTAL SUBSECTOR 42 E
Reliability FAIR. (PLANS 19 and 21)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(153) N coasts of Yokchi-do, Sangnoda-do, and Yonhwa-do. (PLAN 19)	Partly obstructed; approach channeled.	3 beaches; 0.1 to 0.6 mi	25 to 50 ft.	1 on 15.	Surf moderate to light.	Sand and pebbles.	Steep slopes of hilly islands; probably terraced in part.	None known.
(154) Shore of Tumi-do. (PLAN 19)	Generally clear.	3 beaches; N beach 1.7 mi., others 0.1 mi.	25 to 50 ft.	1 on 15.	Surf light.	Sand and pebbles.	Steep slopes of hilly island; probably terraced in part.	None known.
(155) S shore of Saryang-do. (PLAN 19)	Obstructed.	Pocket beaches; average 0.2 mi.	25 to 50 ft.	1 on 15.	Surf moderate.	Sand and pebbles.	Steep slopes of hilly island; probably terraced in part.	Trails.
(156) N shore and central passage of Saryang-do. (PLAN 19)	Generally clear; approach channeled.	Several beaches; average 0.4 mi.	25 to 50 ft.	1 on 15.	Surf light.	Sand and pebbles.	Steep valleys in mountainous island.	Trails skirt shore.
(163) Vicinity of Mangchi-bong. (PLAN 19)	Approach channeled; mud flats front beach.	Strip beaches; total 5 mi.	25 to 50 ft.	1 on 15.	No surf.	Sand and mud.	Backed directly by hill slopes on E; narrow flat in rice backed by hills on W.	Trail skirts shore.
(164) Bay N of Chindong-ni. (PLAN 19)	Partly obstructed; mud flat fronts beach.	0.7 mi.	25 to 50 ft.	1 on 15.	Surf light.	Sand, pebbles, and mud; soft.	Backed by small valley terraced in rice.	Trail skirts shore.
(165) Channel S of Chindong-ni. (PLAN 19)	Approach channeled; inner beaches obstructed.	8 mi.; many rocky interruptions.	25 to 50 ft.	1 on 15.	Surf generally light; moderate with SE winds.	Sand and pebbles; inner beaches soft and muddy.	Backed by steep slopes or narrow strips of flat in rice.	Trail skirts shore; N and S beaches separated by strait.
(166) Vicinity of Pongch'on (Pongchong). (PLANS 19 and 21)	Partly obstructed; several islands near shore.	Pocket beaches; average 0.3 mi.	25 to 50 ft.	1 on 15.	Surf moderate to heavy with SE winds.	Sand and pebbles.	Backed by alluvial patches and steep mountain slopes.	Trail skirts shore; unimproved road ¼ to 2¼ mi. inland from north and south beaches.

TABLE IV - 22 Continued

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(167) Aenggang-man (Aenggang-hae). (PLAN 21)	Partly obstructed; beaches fronted by mud flats.	7 mi.	50 to 75 ft.	1 on 20.	Surf heavy with S winds.	Sand and pebbles.	Backed by steep slopes on sides of bay, by 1,000-ft. flat in rice rising to hills at head of bay.	Poor roads and trails skirt shore within 1,000 ft.
(168) S and W of Ungbong-san. (PLAN 21)	Obstructed; small islands close to shore.	Several beaches; 0.5 to 2 mi.	25 to 50 ft.	1 on 15.	Surf heavy with S quadrant winds.	Sand and gravel.	Backed by steep hill slopes; small steep valleys terraced in rice.	Trail and narrow road skirt shore.
(169) Vicinity of Togwol-li. (PLAN 21)	Obstructed; mud flat fronts beach.	3.6 mi.	50 to 75 ft.	1 on 15.	Surf light.	Sand and gravel; some muddy patches.	Backed by hill slopes; small valleys terraced in rice.	Trails within 0.5 mi.
(170) W of Mangun-san. (PLAN 21)	Obstructed; mud flat fronts beaches in N.	7 mi., rocky interruptions.	25 to 50 ft.	1 on 15.	Surf generally light; moderate with S winds.	Sand and pebbles.	Backed by steep hill slopes; small steep valleys terraced in rice.	Trail skirts shore within 1,500 ft.
(171) NE of Namhae. (PLAN 21)	Obstructed; approach channeled; fronted by mud flats.	9 mi.; interrupted by small rocky capes.	25 to 50 ft.	1 on 15.	Surf light.	Sand, pebbles, and mud.	Backed by hills and small flats terraced in rice.	Trail skirts shore within 0.5 mi.; improved road lies close inland of S beaches.
(172) E coast of Kangjin-hae. (PLAN 21)	Partly obstructed; approach channeled; mud flats front most of beach.	6.5 mi., interrupted by rocky points.	25 to 50 ft.	1 on 15.	Surf light.	Sand, pebbles, and mud.	Backed by hills and small flats terraced in rice.	Trail skirts shore within 0.25 mi.

F. Mouth of the Somjin-gang (Sa Pu River) to Namyol-li.
(34°58'N, 127°46'E; 34°35'N, 127°29'E)
(PLAN 21; FIGURE IV - 103; U.S.H.O. charts V3-27, V3-35, V3-36, 3239, 3240, 5457, 5458, and 5494)

(1) Coast.

Bottom gradients off this subsector range from *flat* to *steep*. The 10-fathom line approximately coincides with the coastline in a few places, but lies as far as 15½ miles from the mainland in others. Depths of 20 fathoms are charted only southwestward of Sori-do (subdivision 6).

The coast is deeply indented by 2 large bays and by many smaller bights and coves. The shores of most of the indentations are bordered by extensive drying mud and sand flats; elsewhere, fringing reefs generally are present. Many mountainous islands, hilly islets, and rocks lie off the coast.

The coasts consist mainly of slopes and cliffs rising from the water's edge. At the heads of the indentations, however, the slopes commonly are interrupted by alluvial flats with low, level, muddy or sandy shores.

With the exception of the flats, the inland terrain consists of rugged hills and mountains which are covered with grass and scrub pine. The alluvial areas are planted to rice and grain.

Fishing villages and small towns are scattered along the coast, but Yosu (*Reisui*) (34°44'N, 127°45'E) is the only city of importance. An improved road and railroad (Chapter VII) extend from Yosu northwestward about 21 miles to Sunch'on (*Junten*), and connect with an improved road and railroad extending between Kwangyang (*Kōyō*), 5½ miles east-northeastward of Sunch'on, and Posong (*Hōjō*) (34°46'N, 127°05'E). Most of the settlements, however, are served only by unimproved roads and foot trails.

1

Bottom gradients are *flat*, except off the southeastern extremity of the subdivision, where there are depths of 10 to 20 fathoms a few hundred feet off shore.

The coast of Kwangyang-man (Kuwagyan Wan on U.S. H.O. chart 5457) is considerably indented. Except off the southeastern extremity, the coast is bordered by broad drying mud or sand flats. The largest sand flats lie west of the mouth of the Somjin-gang in the northeastern part of the subdivision, and at the northwestern extremity of Kwangyang-man; these flats grade seaward into mud flats.

Much of the coast consists of moderate to steep hill slopes rising directly from the shore. At many localities, particularly along the western and southern sides of the bay, the slopes are fronted by narrow alluvial strips or are interspersed with alluvial flats at the valley mouths. The alluvial areas, most of which lie at the head of indentations, generally are fronted by sandy beaches (beach areas (176) to (178) and (180), TABLE IV - 23). There is a small area of salt pans at the northwestern extremity of Kwangyang-man.

The inland terrain consists mostly of steep hills and rugged mountains which are covered with grass and scrub pine. Many relatively short, steep, narrow valleys cut the flanks of the hills and mountains. The largest alluvial areas lead inland from the vicinity of Kumni-ri (34°59'N, 127°43'E), from the northwestern angle of Kwangyang-man, and from the southern part of the bay, east of Hwach'i-ri. The alluvial flats are planted to rice and grain.

Kwangyang (*Kōyō*), the only large settlement, is located on the alluvial flat at the northwestern extremity of Kwangyang-man, about 2 miles inland. It is connected with Sunch'on (*Junten*), 5½ miles west-southwestward, and with Yosu

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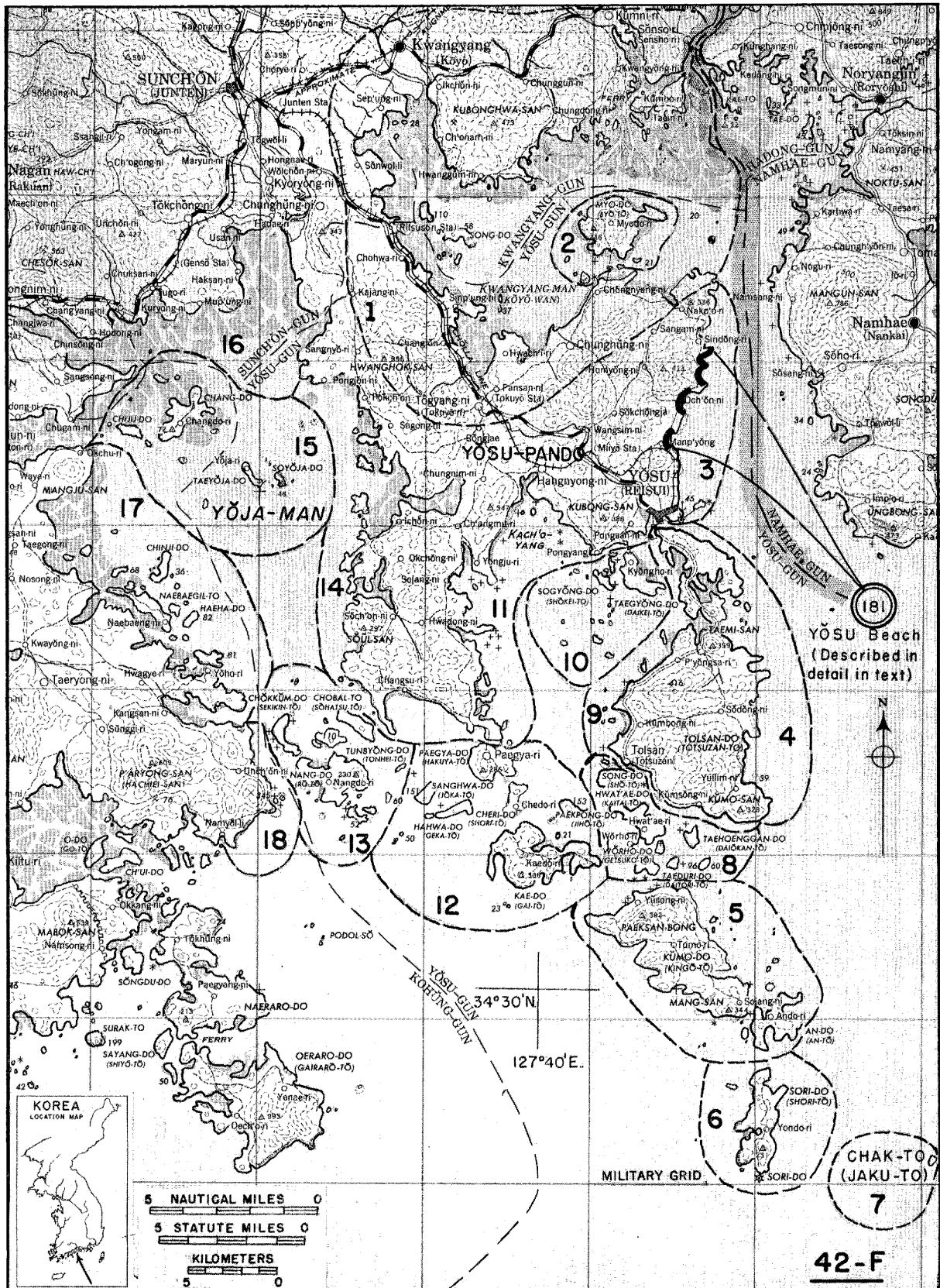


FIGURE IV - 103. Coastal subsector 42 F.
Beach areas are shown on PLAN 21.

(*Reisui*), 21 miles to the southeast, by an improved road and railroad which parallel the western side of Kwangyang-man. Villages, connected by foot trails, are scattered along the coast, most of them on alluvial flats.

2

Bottom gradients are mostly *flat* off the western, southern, and eastern sides of Myo-do (Koyei To on U.S.H.O. chart 5457); off the southwestern and southeastern tips of the island, and off the northern side, the gradients are largely *steep*.

The coast has several small indentations; it is bordered almost entirely by drying mud or sand flats which are most extensive off the western and eastern sides.

Moderate to steep slopes rise from most of the shore. At most of the valley mouths, the slopes are interrupted by small alluvial patches with low, level, muddy or sandy shores. The majority of the flats are located at the heads of the indentations; some are fronted by pocket beaches (beach area (179)).

The interior is made up of rugged hills covered with grass and scrub pine. The hills are cut by several short, steep, narrow valleys. However, the largest valley on the island, which leads inland from the central part of the east coast, is relatively broad, has a gentle gradient, and is mainly floored with alluvium. The alluvial areas and the lower, gentler hill slopes are cultivated.

Several small villages are located on the alluvial flats, either along the shore or short distances inland. A foot trail extends across the western part of Myo-do. Ferries at each end of this trail connect the island with the mainland.

3

Bottom gradients range from *steep* to *flat*, being most gradual off the southern part of the coast; depths of 10 to 20 fathoms lie within a few hundred feet to $\frac{1}{2}$ mile from shore in the north.

The coast is indented on a small scale. Narrow drying mud and sand flats fringe almost all the coast at the northern and southern ends, and border some of the bights in the central part. Much of the remainder of the coast is fringed by reefs.

Along the promontories and around the heads of a few of the smaller indentations, spurs from the interior rise in moderate to steep slopes from the water's edge. At the heads of most of the coves and bights, the shore is low, flat, and muddy or sandy; such stretches are backed by small alluvial flats at the valley mouths. Three of these flats are fronted by sandy landing beaches, described in detail as beach area (181).

The interior consists of rugged hills and low mountains cut by short, steep, narrow ravines and by several larger valleys; the latter are floored with alluvium for most of their length. The alluvial flats are planted to grain and rice, and some of the lower, gentler hill slopes are planted to grain. Elsewhere, the terrain is covered with grass, scrub pine, and a few scattered pine trees.

Several fishing villages, connected by foot trails, are located on the alluvial flats along the coast.

4

Bottom gradients off the eastern coast of the large irregular island known as Tolsan-do (Torusan To on U.S.H.O. chart 5458) range from *steep* to *flat*, but are largely *moderate*; the 10-fathom line lies from 2 to $\frac{1}{2}$ miles off shore.

The coast is considerably indented, particularly in the north. Most of the northern part of the coast is bordered by drying mud and sand flats which fill the deeper indentations. Similar flats occur over small areas in a few places to the south.

Most of the coast consists of steep to moderate slopes rising from the water's edge. In places, particularly at the heads of the indentations, the slopes are interrupted by small alluvial flats with low, level, sandy or muddy shores. Some of these flats are fronted by well-developed sandy pocket beaches (beach areas (182) to (184)). The northern part of the island consists of an irregular peninsula, connected with the southern part by a low narrow sand neck about 4 miles south-southeastward of Yosui (*Reisui*). A stretch of precipitous rocky cliffs, nearly a mile long, rises from the shore in the south-central part of the subdivision.

The interior consists of rugged hills and low mountains which are cut by short, steep, narrow ravines. The cliffed stretch mentioned above is backed by a high, nearly isolated ridge. A broad open valley, floored with alluvium, leads inland from the southern end of the ridge. The hills and mountains are covered with grass and scattered patches of scrub pine; the alluvial areas are planted to rice and grain. Fishing villages, connected by unimproved roads or foot trails, are located on some of the coastal flats.

Several small hilly islets, covered with grass and scrub pine, lie off the coast; the islets terminate in steep reef-fringed slopes.

5

Bottom gradients are *moderate* to *steep*; the 10-fathom line practically coincides with the shoreline off some of the promontories, but elsewhere lies as far as $1\frac{3}{8}$ miles off shore; depths of more than 10 fathoms are not charted off the western end of Kumo-do (Kommo To on U.S.H.O. charts 5457 and 5458).

The northern and most of the eastern sides of Kumo-do are fairly straight, but elsewhere the coasts of Kumo-do and An-do (An To) are much indented. Drying mud and sand flats fill the heads of most of the bays, and form narrow discontinuous strips off other parts of the coasts. The remainder of the coast is fringed by reefs and rocks. In most places, moderate to steep slopes rise from the water's edge, but the ends of the promontories between the bays on the southwestern side of Kumo-do are largely cliffed. In places, especially at the heads of the indentations, the slopes are broken by small alluvial flats at the valley mouths. Most of the flats are fronted by sandy pocket beaches (beach area (185)), but a few have muddy shores.

The inland terrain consists of rugged hills and low mountains covered with grass and scrub pine. The hills and mountains are cut by short, steep, narrow ravines, and by a few larger, more open valleys. The alluvial flats in the lower parts of the stream valleys are planted to rice and grain.

Several villages are located on the alluvial flats along the coast or up the valleys. A foot trail extends the length of the island, running partly along the coast and partly inland.

6

Bottom gradients locally are *moderate*, but generally are *steep*; the 10-fathom line coincides with the coastline in some places, but in others lies nearly $\frac{1}{2}$ mile off shore.

The coast of Sori-do is considerably indented, and commonly is fringed with reefs and rocks. Small drying mud or sand flats border the coast in a few places, and fill the heads of 3 coves on the west side.

Almost the entire coast consists of steep to moderate slopes or cliffs rising from the water's edge. Cliffs make up most of the east coast and parts of the south and west coasts. At the heads of most of the indentations, the slopes are interrupted by small alluvial strips or patches which occupy the valley mouths. The inner parts of several of the coves are bordered by sandy pocket beaches (beach area (185)).

The interior consists of steep, irregular, grass-covered hills; several short, steep, narrow valleys lead inland from the coast. The alluvial flats and some of the lower, gentler hill slopes are cultivated. Villages are located at the heads of the 3 largest bays on the northeastern, southern, and west-central sides; the settlements are connected by a foot trail.

Off the northwestern side of Sori-do is Anma-do (Anma Somu), a hilly whitish islet which is partially grass-covered. It culminates in 3 peaks, the highest of which is 183 feet.

7

Bottom gradients off Chak-to (Chaku To; U.S.H.O. chart 5458) are *steep*; the 10-fathom line is less than 300 feet off the western and southern sides, and 1/10 to 1/8 mile off the northern and eastern sides.

Chak-to is encircled by narrow drying mud and sand flats. The island consists of 2 small grass-covered hills joined by a narrow saddle. Cliffs encircle the northwestern, northern, and east-central sides, but elsewhere the hills terminate in steep slopes. The summit of the northernmost and highest hill is 342 feet high. The island probably is uninhabited.

8

Bottom gradients range from *steep* to *gentle*; in a few places, the 10-fathom line practically coincides with the coastline, but elsewhere it generally lies 1/10 mile to 3/4 mile off shore.

Most of the islands are irregular and considerably indented. They are bordered partly by reefs and rocks and partly by drying mud or sand flats; the latter fill some of the bays and coves.

The coasts of the islands consist mainly of slopes or cliffs rising directly from the shore. At the heads of some of the indentations, the slopes are interrupted by small pocket beaches (beach area (185)) fronting alluvial flats.

Inland, steep to rolling hills are covered with grass and a few patches of scrub pine. Blunt, steep ravines, many with small alluvial patches at their mouths, extend inland from the heads of some of the bays and coves. A few fishing villages, surrounded by cultivated plots, are located on the alluvial flats.

9

Bottom gradients are *steep* to *gentle* off the southern side of Tolsan-do (Torusan To on U.S.H.O. chart 5457), with the 10-fathom line lying from 1/8 mile to more than 1 1/4 miles off shore. Along the western side of the island, gradients are *moderate* to *flat*.

The southern and western sides of the southern part of Tolsan-do are little indented, but the western side of the peninsula forming the northern part of the island is very irregular. Drying mud or sand flats fringe most of the coast; the southeastern coast is fringed by reefs.

The southeastern and northern coasts consist mainly of moderate to steep slopes or cliffs rising from the water's edge. Elsewhere, this type of coast is confined chiefly to the ends of the promontories between the bights. Along the sides of the

bights, the slopes are fronted by narrow beach-fringed alluvial strips (beach areas (183) and (186)); at the heads of most of the indentations, the slopes are interrupted by small beach-fringed alluvial flats (beach area (184)) which extend inland up the valleys.

The peninsula forming the northern part of Tolsan-do is connected with the remainder of the island by a low, narrow, sandy neck.

The terrain inland consists principally of rolling to rugged hills and low mountains, covered with grass and scrub pine. The flanks of the hills and mountains are cut by short, steep, narrow ravines. Several relatively large open valleys, floored with alluvium over most of their length, lead inland from the heads of the larger bights or inlets. The alluvial areas are planted to rice and grain; some of the lower, gentler hill slopes are cultivated in dry crops.

A few fishing villages are scattered along the alluvial flats, behind the beaches or short distances inland. The villages are connected by foot trails along the southern side of Tolsan-do, and an unimproved road leads northward along the coast from Tolsan to a point opposite Yosu (*Reisui*); a ferry connects this road with Yosu.

10

Bottom gradients largely are *flat*, with controlling depths of 2 fathoms or less.

The eastern and northern sides of Taegyong-do (Kyon To on U.S.H.O. chart 5457) are considerably indented, and the bays and coves are almost filled with drying mud and sand flats; elsewhere, the coasts are little indented, and generally are fringed by reefs and rocks.

The islets consist of rolling to steep hills covered with scrub pine and scattered patches of grass and pine trees (FIGURE IV-104). The hills terminate in moderate to steep slopes, which are largely fringed by narrow beaches (beach area (187)) on the larger islets. At the heads of some of the indentations on Taegyong-do, the slopes are interrupted by small alluvial patches, which lie at the mouths of short, blunt, steep ravines.

A few fishing villages, surrounded by small cultivated plots, are located on the alluvial flats.

11

Bottom gradients off the northern and western sides of the large bay Kach'o-yang (Kaamakku Pataan on U.S.H.O. chart 5457) largely are *flat*, with controlling depths of 2 fathoms or less.

The coast is considerably indented on a relatively small scale. Much of it is fringed by narrow drying mud or sand flats which fill some of the coves and bays; the remainder generally is bordered by reefs and rocks.

Along the promontories and at places along the sides of the intervening bays, moderate to steep slopes rise from the water's edge. Along the remainder of the coast, the slopes are fronted by alluvial strips or flats with low sandy or muddy shores. Well developed sandy beaches (beach area (188)) fringe most of the northwestern and northern shores of Kach'o-yang.

The terrain immediately inland consists of rolling to rugged spurs, alternating with alluvial flats in the lower parts of the valleys and alluvial strips along the coast. In the interior, the spurs merge into rugged hills and low mountains which are cut

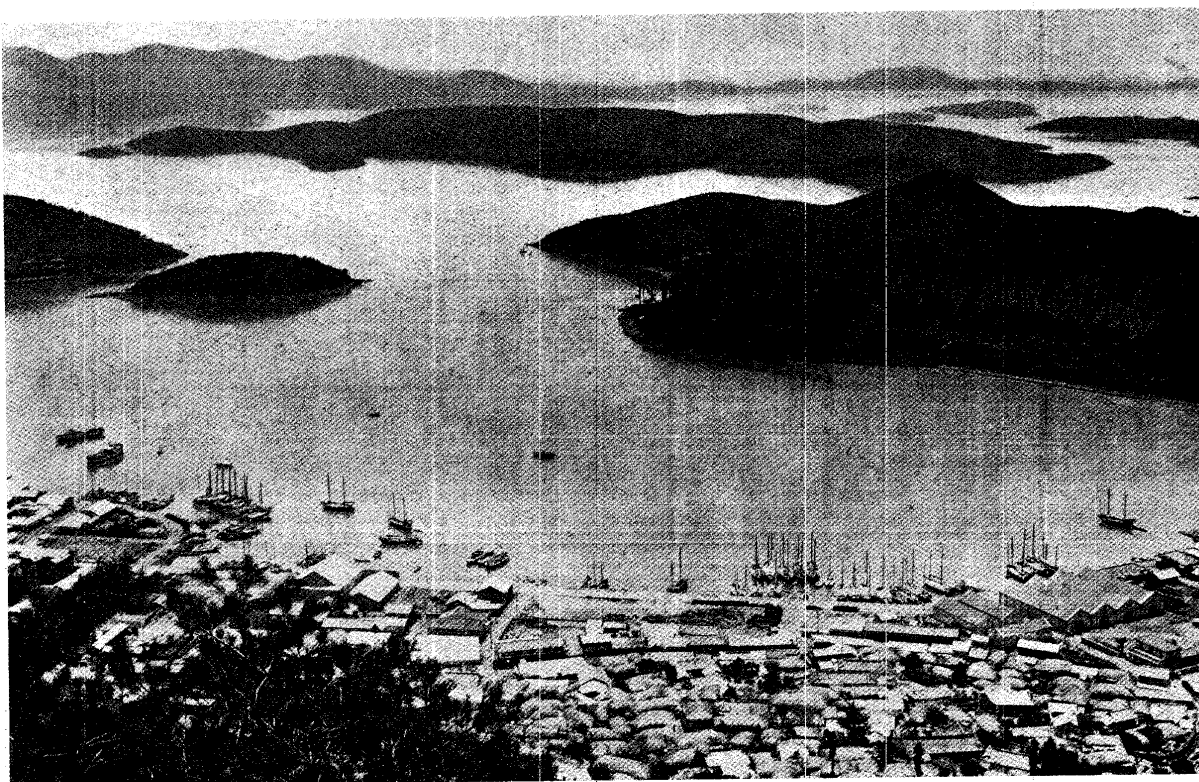


FIGURE IV - 104. *South coast. Yosui (Reisui).* Beach areas (187) and (188).

View south-southwestward from Yosui, showing steep wooded shores of islands, and narrow strip beaches. Northwestern tip of Tolsan-do (Torusan To on U.S.H.O. chart 5457) is at left middleground, and the western coast of the island in left background; Taegyong-do (Kyon To on U.S.H.O. chart 5457) is in center middleground. Tip of peninsula at right middleground forms western side of Yosui-hang (*Reisui-kō*), the inlet off the city of Yosui. Approximate position of Yosui, $34^{\circ}45'N$, $127^{\circ}44'E$.



FIGURE IV - 105. *South coast. Yosui (Reisui).*
Beach areas (187) and (188).

View south-southwestward from high ground to north of Yosui, showing port and city at lower right partially hidden by foreground. Large island at left is Taegyong-do (Kyon To on U.S.H.O. chart 5457). Approximate position of Yosui, $34^{\circ}45'N$, $127^{\circ}44'E$.



FIGURE IV - 106. *South coast. Yosui (Reisui).*

View northeastward from western shore of inlet off Yosui, showing port and city. Hill backing city is 716 feet high. Approximate position of Yosui, $34^{\circ}45'N$, $127^{\circ}44'E$; U.S.H.O. chart 5457.

by short, steep, narrow ravines. The uplands are covered with grass, scrub pine, and scattered pine trees. The alluvial areas and the lower, gentler hill slopes are cultivated.

Yosu (*Reisui*), at the eastern extremity of the subdivision, is the largest city in the vicinity and is a port for shallow-draft vessels (Chapter VI). Yosu-hang (*Reisui-kō*), the inlet off the city (FIGURES IV-104 to IV-106) is almost filled by a drying mud bank. Numerous small villages, connected by foot trails, are scattered along the coastal flats. An improved road and railroad extend northwestward about 21 miles from Yosu to Sunch'on (*Junt'en*).

12 and 13

Bottom gradients range from *steep* to *flat*; the 10-fathom line lies from a few hundred feet to nearly 1 mile off shore. In subdivision 13, the depths between some of the islands are shoal.

The coasts of the larger islands are considerably indented. Drying mud or sand flats form a narrow belt off parts of the coasts, and partially or completely fill some of the indentations. Elsewhere, the shore largely is fringed with reefs and rocks.

In most places, cliffs or moderate to steep slopes rise from the water's edge. However, the slopes are fronted by sandy beaches around several of the indentations, and there are small beach-fringed alluvial patches at the heads of some of the coves. There are beaches on 3 of the islands in subdivision 12 (beach area (189)), and on 2 of the islands in subdivision 13 (beach area (194)).

The interior of the islands consists of rolling to rugged hills and low mountains. On the larger islands, the hills and mountains are cut by short, blunt, steep valleys extending inland from the heads of the coves; the lower parts of the valleys are floored with alluvium. Grass and scrub pine grow on the uplands; the lower hill slopes and the alluvial flats are cultivated.

Fishing villages, surrounded by small cultivated plots, are scattered along the coastal flats; foot trails connect the villages on each island.

14

Bottom gradients range from *steep* to *flat*. Along the east side of Chobal-sudo (Chopari Suido on U.S.H.O. chart 5457), depths of more than 20 fathoms lie immediately off shore at one locality; northward, however, the depths steadily decrease to less than 3 fathoms along the northeastern shore of Yoja-man (Yoji Wan).

The coast is considerably indented. Drying mud or sand flats fringe the coast and fill the coves and bays as far south as Soch'on-ni (34°41'N, 127°35'E). Similar flats border the heads of the indentations farther southward, but the intervening stretches are fronted by reefs and rocks.

Most of the coast consists of moderate to steep slopes and a few short stretches of cliffs which generally rise from the water's edge. In places, however, the slopes are fringed by sandy beaches (beach areas (190) and (191)). At the heads of the indentations, the slopes are interrupted by small alluvial flats with low, level, sandy or muddy shores. Some of these flats are bordered by pocket beaches; a few are fronted by earth embankments.

The terrain inland consists of rugged hills and low mountains which are covered with grass and scrub pine. The uplands are cut by short, steep, narrow ravines. Larger, more open

valleys, floored with alluvium, lead inland from some of the bays and inlets. The alluvial areas are planted to irrigated rice and grain.

Several fishing villages are located on the alluvial flats along the coast, or inland up the valleys; they are connected by foot trails.

15

Bottom gradients are *flat*, and depths are less than 3 fathoms except in a narrow channel between Chang-do and Taeyoja-do (Taiyuchaa To on U.S.H.O. chart 5457). West of this channel, all but the 3 southernmost islets are surrounded by extensive drying mud flats which are connected with the flats on the west side of Yoja-man (Yoji Wan). East of the channel, Taeyoja-do and the southwestern side of Soyoja-do are almost encircled by narrow drying mud flats.

Several large coves indent the coast of Chang-do, but along the other islets the indentations are small. The head of a small cove on the east side of Chang-do has been converted to a salt pan area. The coasts of the islets consist mainly of moderate to steep slopes, although the southwestern end of Chiju-do is cliffed. At intervals, the hill slopes on the larger islets are cut by short, blunt, steep ravines, some of which have small alluvial patches at their mouths. In some places, especially along the promontories, the slopes rise from the water's edge; in others, largely along the indentations, they are fronted by sandy beaches. The beaches (beach area (192)) are concentrated on Chang-do.

Inland, rolling to steep ridges are covered chiefly with pine trees; some patches of grass and scrub pine are present, and there are a few scattered deciduous trees around the villages. The alluvial patches and the lower, gentler hill slopes are cultivated. Fishing villages are scattered along the coasts of the islets.

16

Bottom gradients are *flat*, and depths are less than 3 fathoms. The bottom consists mainly of mud.

The coast is indented by a large bay, 2 long inlets, and numerous coves and bights. Broad drying mud flats as much as 2¼ miles wide border the shore and fill the indentations.

Most of the coast is low, level, and muddy or sandy; it is backed either by narrow alluvial strips which give way inland to hills and mountains, or by alluvial plains. Part of this coast is fronted by sandy beaches (beach areas (191) and (192)); the remainder is muddy, and is bordered in places by salt pans or by earth embankments. Along several stretches, moderate to steep slopes, backed by hills and low mountains, rise directly from the water.

Inland, rolling to rugged hills and steep mountains inter-finger irregularly with branching alluvial flats. In several localities, small isolated hills rise from the surface of the flats. The most extensive alluvial areas extend inland from the northern extremity of Yoja-man (Yoji Wan) to Sunch'on (*Junt'en*), and from the heads of the 2 large inlets on the western side of Yoja-man.

The hills and mountains are covered with grass, scrub pine, and scattered pine trees. The alluvial areas are planted to irrigated rice and dry crops, which are protected from floods by earth embankments along parts of the major streams. Parts of the lower, gentler hill slopes also are cultivated.

Villages and small towns are scattered along the coastal flats. The only city in the subdivision is Sunch'on (*Junten*), which is located on a river flat 5 miles northward from the head of Yoja-man (Yoji Wan).

Improved highways and railroads (Chapter VII) lead northwestward, eastward, southeastward, and southwestward from Sunch'on; the smaller settlements are connected by unimproved roads or trails.

17

Bottom gradients as far south as the island of Chinji-do are flat, and depths are less than 3 fathoms. Along the southern part, gradients are steeper, and depths of 10 fathoms or more are recorded $\frac{1}{8}$ mile to $\frac{1}{4}$ mile off the headlands.

The coast is considerably indented. Broad drying mud flats fringe almost all the shore as far south as the islet off Yoho-ri ($34^{\circ}40'N$, $127^{\circ}28'E$), and fill the indentations. Most of the remainder of the coast is bordered by narrow drying sand flats which fill the heads of the indentations.

Most of the coast consists of moderate to steep slopes interspersed with a few short stretches of cliffs. In some places, the slopes and cliffs rise directly from the water, but in others they are fronted by narrow sandy beaches (beach areas (192) and (193)). Around the indentations, the slopes are interrupted by alluvial flats with low, level, muddy or sandy shores; small salt pan areas front some of the flats. Several hilly islands and islets lie off the southern two-thirds of the subdivision. They are covered with grass and pine trees, and terminate in steep slopes and cliffs.

The slopes and cliffs on the mainland are backed by rolling to rugged hills and low mountains, which are cut by short, steep, narrow ravines. Along the indentations, the hills and mountains interfinger irregularly with alluvial flats. The uplands are covered with grass, pine trees, and scrub pine; the alluvial areas are intensively cultivated.

Several villages, connected by foot trails, are located on the alluvial flats along the coast, or inland up the valleys.

18

Bottom gradients range from steep to gentle in the north, and are largely flat in the south. Depths of 10 fathoms or more lie $\frac{1}{4}$ to $\frac{1}{2}$ mile off the northern half, but depths off the southern half are less than 6 fathoms.

The coast is little indented, and most of it is bordered by narrow mud or sand flats.

Much of the coast consists of moderate to steep slopes fronted by narrow sandy beaches (beach area (193)); in places, however, the slopes rise directly from the water. At intervals, the slopes are interrupted by small beach-fringed alluvial flats at the valley mouths.

The slopes are backed by low rugged mountains, which are cut by short, steep, narrow ravines and by a few larger valleys floored with alluvium. The uplands are covered with grass, except for an area of deciduous woods at the northern end. The alluvial flats are intensively cultivated. Several villages, connected by foot trails, are located on the alluvial flats along the coast, or short distances up the valleys.

(2) Landing beaches.

(a) General.

TABLE IV - 23
LANDING BEACHES OF COASTAL SUBSECTOR 42 F
Reliability FAIR. (PLAN 21)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(176) S of Kwangyang.	Approach channeled; beach fronted by wide sand and mud flats.	2 beaches; each 0.7 miles.	25 to 50 ft.	1 on 30.	Surf light.	Sand, fairly firm.	Backed by low hills terraced in rice.	Trails and poor roads skirt shore, lead to road and railroad at Kyangyang.
(177) W coast of Kwangyang-man.	Approach channeled; beaches fronted by mud flats.	Interrupted beach; total 5 mi.; also small beaches on islands off shore.	15 to 25 ft.	1 on 30.	Surf light.	Sand, pebbles, and mud.	Backed by hills terraced in rice.	Road and R.R. skirt shore, joining Yosu and Sunch'on.
(178) SW coast of Kwangyang-man.	Approach channeled; beaches fronted by mud flats.	8 mi., interrupted by many rocky points and streams.	15 to 25 ft.	1 on 30.	Surf light.	Sand, probably soft.	Backed on ends by small coastal strips in rice, in center by terraced hill slopes.	Road and R.R. to Yosu and Sunch'on skirt W part of beach within 0.3 mi.; access from rest of beach by trails.
(179) Myo-do.	Approach channeled; beaches fronted by mud flats.	3 beaches; average 0.7 mi.	15 to 25 ft.	1 on 20.	Surf light.	Sand and pebbles; some soft, muddy spots.	Backed by steep terraced slopes.	Trail, connected to mainland by ferry, crosses western part of island.
(180) NE of Chunghung-ni.	Partly obstructed; mud flats in N.	Approx. 6 mi., interrupted by short stretches of rocky coast.	25 to 50 ft.	1 on 20.	Surf moderate on E; light on N.	Sand and pebbles.	Hills and small valleys terraced in rice.	Trail skirts shore; road and R.R. to Yosu 6 mi. inland over rough hills.
(181) N from Yosu (<i>Reisui</i>). (FIG. IV - 107) (See also (b) below).	Generally clear; restricted on N and S ends.	3 beaches; average 0.8 mi.	10 to 75 ft.	1 on 10.	Surf moderate.	Sand and pebbles.	Hills and small valleys terraced in rice.	Trail within 0.5 mi. inland; R.R. to Yosu at S end of S beach.

Confidential

COASTS AND LANDING BEACHES

Page IV - 133

TABLE IV - 23 Continued

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(182) SE of Yosü.	Partly obstructed; W end channeled.	Strip beach 3 mi. long, interrupted by short stretches of cliff.	10 to 20 ft.	1 on 5.	Surf moderate.	Sand and pebbles; scattered boulders.	Wooded hill slopes.	Trail follows hill slopes within 500 ft.
(183) Vicinity of Taemi-san.	Approach channeled; beach fronted by mud flats.	Strip beaches; total 5 mi.	10 to 20 ft.	1 on 10.	Surf light.	Sand and pebbles.	Wooded hill slopes.	Poor road within 1/2 mi.
(184) E and S coasts of Tolsan-do.	Generally clear; several small islands near shore.	Pocket beaches; average 0.3 mi.	25 to 50 ft.	1 on 10.	Surf moderate.	Sand and pebbles.	Small steep valleys terraced in rice.	Trail skirts shore of island.
(185) Kumo-do and neighboring islands.	Generally obstructed or channeled.	Pocket beaches; average 0.4 mi.	20 to 30 ft.	1 on 10.	Surf moderate to light.	Sand and pebbles.	Hill slopes.	None, or trails over rough hills of islands.
(186) W coast of Tolsan-do.	Approach channeled; obstructed.	Strip beaches; total 4 mi.	10 to 20 ft.	1 on 10.	Surf light except with NW winds.	Sand and pebbles.	S beach backed by small flat in rice; N by steep hill slopes.	Road skirts shore.
(187) Taegyong-do and Sogyong-do. (Fig. IV - 104).	Approach channeled; obstructed.	4.5 and 0.6 mi.	10 to 20 ft.	1 on 5.	Surf light.	Sand and pebbles.	Steep wooded slopes.	Rough islands separated from mainland by narrow strait.
(188) W and SW from Yosü. (Figs. IV - 104 and IV - 105)	Approach channeled, obstructed, shoal; beach partly obstructed.	Approx. 14 mi.; many interruptions.	10 to 30 ft.	1 on 10.	Surf light.	Sand and pebbles.	Irregular indented mountainous coast; beaches backed by steep slopes except for a few small valleys.	Trail or poor road within 1,500 ft.; R.R. backs beach at N part of area; otherwise is accessible only by difficult trails.
(189) Paegya-do, Sanghwa-do, and Hahwa-do.	Approach channeled; partly obstructed.	3 beaches: 1.9, 0.8, and 1 mi.	10 to 20 ft.	1 on 10.	Surf light.	Sand and pebbles.	Steep slopes of islands.	Trail and town on Paegya-do.
(190) Vicinity of Changsu-ri.	Approach channeled; beach fronted by mud flats.	Strip beaches; 0.3 to 1 mi.	15 to 25 ft.	1 on 10.	Surf moderate on S; light on W.	Sand and pebbles.	Hill slopes terraced in rice.	Trails skirt shore.
(191) N of Soch'on-ni.	Approach channeled; beaches fronted by mud flats.	Strip beaches; 0.4 to 5 mi.	15 to 25 ft.	1 on 15.	Surf generally light.	Sand and pebbles.	Hill slopes; partly wooded, partly barren, partly in terraced crops.	Trails skirt most of shore; no main routes nearby.
(192) W shore of bay S of Sunch'on.	Approach channeled; beaches fronted by mud flats.	Many short beaches; average 0.5 mi.	25 to 50 ft.	1 on 15.	Surf light.	Sand and pebbles.	Beaches backed by wooded and terraced hills; many front small steep valleys.	Exits only by trails, except at head of bay, where road and R.R. to Sunch'on skirt shore.
(193) E of P'aryong-san.	Partly obstructed; approach channeled in N.	6 beaches; 0.2 to 1.5 mi.	25 to 50 ft.	1 on 15.	Surf moderate in S; light in N.	Sand and pebbles.	Small flats, maximum 1,500 ft. wide, backed by steep slopes.	Trails within 0.3 mi.; no main routes nearby.
(194) Nang-do and Chokkum-do.	Obstructed.	Several beaches; max. 1 mi.	15 to 25 ft.	1 on 10.	Surf moderate in S; light in N.	Sand and pebbles.	Rough steep hill slopes of islands.	Trails only; islands isolated from mainland by 1-mi.-wide passage.

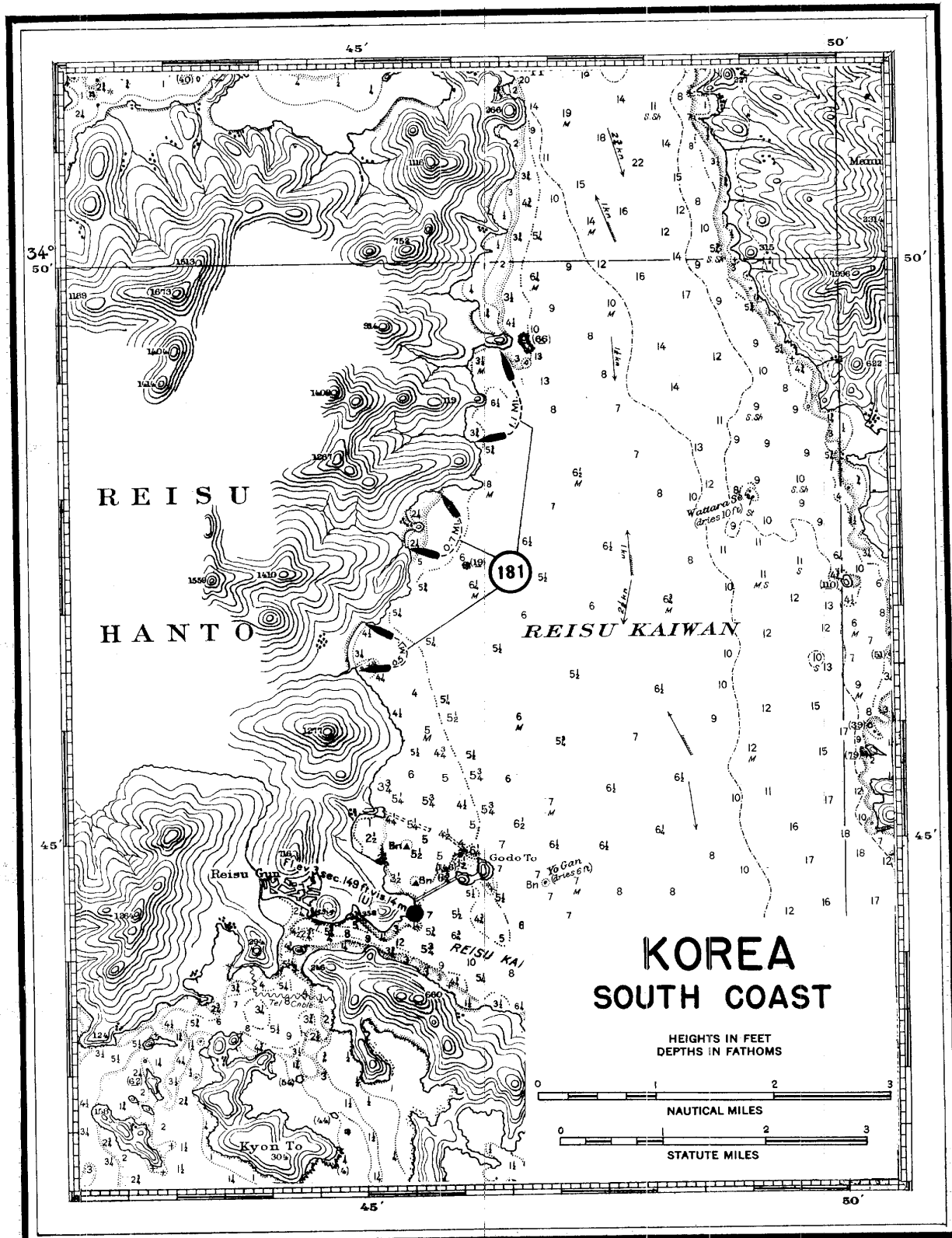


FIGURE IV - 107. South coast. North of Yosu (Reisui). Beach area (181).
Section from U.S.H.O. chart 5458.

(b) North from Yosu (*Reisui*), beach area (181). Reliability FAIR. (PLAN 21; FIGURE IV - 107)

1. LOCATION AND EXTENT. Three short sand-and-pebble beaches extend along the coast north of the city of Yosu (*Reisui*), which is on a long peninsula extending southward from the central south coast of Korea. The beaches are 0.5, 0.7, and 1.1 miles long. The limits of the beach area are $34^{\circ}46'N$, $127^{\circ}45'E$, and $34^{\circ}49'N$, $127^{\circ}46'E$. The beaches are difficult landing places for several reasons: they are narrow and short, are separated from each other by hills, and have access to the city of Yosu and the road and railroad into the interior of Korea only by trails over hills. However, they are the only places on the south coast of Korea where a wide passage to the mainland from the open sea is available, and where the beaches are not fronted by drying flats, or blocked by numerous rocks and reefs.

2. SEA APPROACH. Yosu-pando (*Reisui* peninsula) and the islands to the south and east restrict the approach to the 30-foot depth to a channel, 4 to 5 miles wide, which trends north-northwestward. The 30-foot depth line is 1,300 to 3,200 feet from the south beach, 3,000 feet from the center beach, 600 to 900 feet from the south half of the north beach, and 600 to 2,500 feet from the north half. The 18-foot depth line is 400 feet off the south beach, 1,200 feet off the center beach, and less than 200 feet from the north beach. There are no near-shore dangers for a direct approach to any of the beaches, but shoals and rocks on the south end of the south beach and at the north end of the north beach restrict the nearshore approach. The bottom slope between the 18-foot depth and the beach is approximately 1 on 30 for the south beach, 1 on 60 for the center beach, and steeper than 1 on 10 for the north beach. There is a sandy drying flat 200 to 300 feet wide fronting the south and middle parts of the center beach, extending north and south from the small rocky peninsula which divides this beach into 2 parts. The bottom material is mud, except within a few hundred feet of shore, where it is probably sand.

With east winds, small waves come directly in to the beaches, and may combine with the general swell coming from the south to form a choppy confused sea, but with relatively small waves. With south winds, large waves move from the south, veering in to the beaches. The prevailing winds are north to northwest from October through May, and from the eastern quadrant from June through September. There is little fog, but rain occurs 10 to 15 days a month in summer. The tidal range is approximately 12 feet at springs, and 3 feet at

neaps. Tidal currents reach speeds of 2 to 3 m.p.h., the flood setting north, and the ebb south.

Sheltered anchorage, over bottom composed largely of mud and some patches of sand, is available in depths of nearly 10 fathoms in the western part of the gulf which fronts the beach, and in depths as great as 18 fathoms in the eastern part. Several rocks and islets lie off both shores of the gulf.

3. CHARACTER OF BEACH. The south beach, 0.5 miles long, is probably composed of sand and pebbles; it has a slope of 1 on 10. It probably averages 50 to 75 feet wide, and is firm. Surf is moderate, the waves coming in chiefly from the south and swinging in to the beach to break in a single or double line of breakers close in shore. The south beach is separated from the center beach by a stretch of cliffed shore 0.8 mile long. The center beach is 0.7 mile long, and has a small rocky interruption just south of the middle of the beach. The beach is probably 50 to 75 feet wide on the south end, narrowing on the north to 10 to 15 feet. The composition is sand and gravel, and the slope 1 on 10. Surf conditions are similar to those at the south beach. The north beach, 1.1 miles long, is separated from the center beach by a stretch of cliffed shore 0.7 mile long. The beach is narrow, probably averaging 10 to 25 feet, and also has a small rocky interruption near the middle. The slope may be 1 on 5 or steeper; the composition is sand and pebbles. It is likely that isolated boulders lie on all these beaches.

4. ADJACENT TERRAIN AND EXITS. Yosu-pando (*Reisui* peninsula) is mountainous. Most of the steeper slopes are timbered, and the gentler ones cultivated in terraced crops. The described beaches line the shore of an irregular ridge cut by small valleys. The south and center beaches front small steep valleys terraced in rice. The slope decreases toward the sea, so that there is an area directly behind the beaches, averaging 600 feet wide, in which the slope is not more than 1 on 10. The north beach lies at the base of a hill; consequently, there is an irregular strip of relatively flat ground immediately behind the beach, and in places the beach is backed directly by steep slopes. Communication between the beaches is by trails which alternately skirt the shore or swing $\frac{1}{4}$ to $\frac{1}{2}$ mile inland to cross saddles where high points extend to the sea. The railroad from Yosu runs north along the shore to the south end of the south beach, then swings west away from the shore. Yosu is one of the important ports of southern Korea developed by the Japanese (Chapter VI).

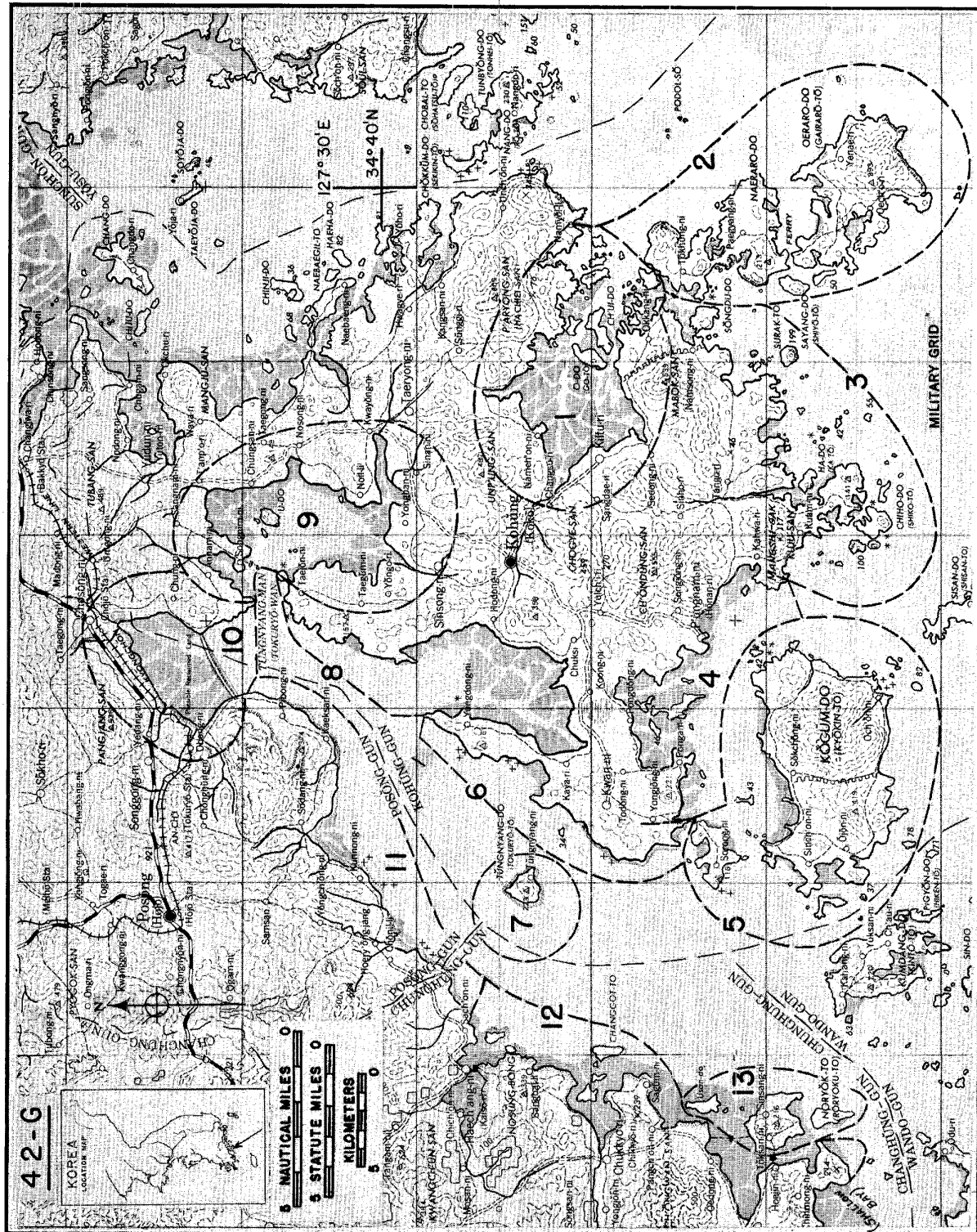


FIGURE IV-108. Coastal subsector 42 G.
Beach areas are shown on PLANS 21 and 22.

G. Namyol-li to the eastern entrance point of Shallow Bay.

(34°35'N, 127°29'E; 34°27'N, 126°56'E)

(PLANS 21 and 22; FIGURE IV-108; U.S.H.O. charts V3-27, V3-35, V3-36, 3239, 3240, 5456, 5457, and 5494)

(1) Coast.

Bottom gradients generally are *flat*. The coast is indented by several large bays, which are partly or completely filled with drying mud and sand flats.

The coast consists of moderate to steep slopes and local stretches of cliffs, interspersed with alluvial flats. In some places, the slopes are bordered by narrow beaches, but in others they rise directly from the water. The flats commonly are bordered by sandy beaches; some, however, have muddy shores, fringed in part by earth embankments.

The slopes are backed by rugged hills and low steep mountains covered with grass, brush, and pine trees. The alluvial areas, except where composed of sand, are intensively cultivated in irrigated rice and grain.

Numerous villages, connected by trails or unimproved roads, are scattered along the coastal flats. A railroad and improved highway skirt the northernmost part of the coast for a short distance southwest of Chosong-ni (34°48'N, 127°15'E).

Kogum-do (Kokumu To on U.S.H.O. chart 5456) and the larger off-lying islands have coasts and inland terrain similar to the mainland. The smaller islets consist of hills terminating in steep slopes or cliffs.

1

Bottom gradients in Haech'ang-man (Heichan Wan) largely are *flat* to *moderate*, but are *steep* in a few places. Controlling depths at the entrance to the bay are less than 4 fathoms.

The coast is deeply indented. Drying mud and sand flats almost fill Haech'ang-man (Heichan Wan) west of O-do (Go-tō), and border most of the remaining shore.

Part of the coast, particularly east of O-do, consists of steep to moderate slopes which either rise from the water's edge or are fronted by narrow sandy stretches. The slopes alternate with alluvial strips or flats which are most extensive west of O-do. Two short stretches of cliffs occur along the south side of the eastern end of the subdivision.

The terrain inland consists largely of gently rolling to rugged hills, and low but steep mountains. Adjacent to the coast, spurs from the hills interfinger with alluvial flats. The largest flats, on the west and north shores of Haech'ang-man (Heichan Wan), extend more than 2 miles inland.

The hills are covered with brush, grass, and pine trees; the alluvial areas are cultivated. Several villages, connected by foot trails or unimproved roads, are located on the alluvial flats along the coast.

The islands in the eastern part of Haech'ang-man (Heichan Wan) are hilly, and terminate largely in steep to moderate slopes; there is a beach (beach area (195), TABLE IV-24) on the southeastern side of Ch'ui-do. Vegetation is similar to that on the mainland.

2

Except off the southern side of Oeraro-do (Gairarō-tō), bottom gradients largely are *flat* to *gentle*, and depths generally are less than 5 fathoms. The 10-fathom line approximately coin-

cides with the shoreline along the southern extremity of Oeraro-do.

The coasts of the islands are greatly indented. Except along the south and east sides of Oeraro-do, drying mud or sand flats border most of the coast and fill some of the indentations. Where the flats are lacking, the coasts are rocky. The coasts consist chiefly of steep to moderate slopes, interspersed with beach-fringed alluvial strips or flats (beach area (195)) at the heads of the bays and bights. The slopes generally rise directly from the shore, but in places are fronted by narrow sandy beaches. Several extensive stretches of cliffs are present along the eastern side of Naeraro-do (Nairarō-tō) and the southern side of Oeraro-do.

Inland, there are steep rugged hills and mountains covered with grass, brush, and scattered deciduous and pine woods. The hills and mountains are cut by short, steep, narrow ravines and valleys, the larger of which have alluvial patches at their mouths; the alluvial areas are cultivated. Several villages, connected by foot trails, are located on the coastal flats or short distances inland up the valleys.

There are several significant landmarks. Koktu-ryo (Kokuto Yo), $\frac{3}{4}$ mile southward of the southern extremity of Oeraro-do, consists of 2 rocky islets; the eastern islet has a reddish color. Taehang-do (Tomuko To), about $\frac{1}{4}$ mile southeastward of the eastern extremity of Oeraro-to, is a wooded hilly islet terminating in cliffs on its south side. Podol-so (Haku Gan), 2 white rocks, lie about $2\frac{3}{8}$ miles northeastward of the southeastern extremity of Naeraro-do.

3

Bottom gradients are largely *flat*. Depths of more than 3 fathoms are encountered only in Nae-sudo (Nai Suido), a channel off the northern end of the subdivision, and off Chiho-do (Chiori To on U.S.H.O. chart 5457), at the southern extremity.

The coast is considerably indented. Drying mud or sand flats fringe most of the coast and fill some of the indentations. The longer promontories and the south side of Chiho-do are bordered by reefs and rocks.

The coast consists of moderate to steep slopes and cliffs alternating with beach-fringed alluvial flats at the heads of most of the indentations. The slopes either rise directly from the water or are fronted by narrow sandy beaches (beach area (196)). The most extensive stretches of cliffs occur at the ends of the longer promontories. The numerous hilly off-lying islets terminate in slopes or cliffs rising from the shore.

The inland terrain is made up of rugged hills and low mountains cut by short, steep, narrow ravines and several larger valleys. The larger valleys, floored with cultivated alluvial flats, lead inland from the heads of the indentations. The hills and mountains are covered with scrub pine and patches of grass and brush. Several villages, connected by foot trails, are located on the coastal flats or inland up the valleys.

4

Bottom gradients are *steep* off Mangshi-gak (Manshi Kaku) (34°29'N, 127°16'E), but elsewhere are *flat* to *moderate*. Controlling depths in Kogum-sudo (Kokumu Suido), which separates the mainland from Kogum-do (Kokumu To on U.S. H.O. charts 5456 and 5457), are 6 to 9 fathoms.

The coast is greatly indented. Drying mud and sand flats fringe the coast, except along the ends of the promontories, and fill some of the indentations.

The coast consists chiefly of moderate to steep slopes alternating with beach-fringed alluvial flats at the heads of the bays and coves. In some places the slopes rise directly from the shore; in others, they are bordered by narrow sandy beaches (beach areas (196) to (198)). Oma-do (Goba To) (34°32' N, 127°12'E) and the islet just northward of it are made up of small beach-fringed hills connected by sandy necks; along the west-central and south sides of Oma-do, the hills terminate in cliffs.

The inland terrain consists of gently rolling to rugged hills and low steep-sided mountains. Short, steep, narrow ravines and a few larger valleys lead inland from the coast. The valleys commonly have alluvial flats at their mouths; the largest of these cultivated flats is located just east of Pungnam-ni (34°31'N, 127°14'E).

The hills and mountains are covered with grass, brush, scrub pine, scattered pine trees, and a few deciduous trees. A few villages, connected by foot trails or unimproved roads, are located on the coastal flats.

5

Bottom gradients off Kogum-do (Kokumo To) are *steep* in a few places, but generally are *flat* to *gentle*. Depths of 10 fathoms are charted a few hundred feet to 1 mile off shore on the west and north sides of the island. Except in a few places, depths around the south and east sides of the island are less than 10 fathoms.

Several large bays and bights indent the western and north-western sides of Kogum-do, but elsewhere the coast is indented only on a small scale. The promontories and some of the smaller bights are fringed by reefs and rocks. Drying mud or sand flats border the remainder of the coast and fill many of the indentations.

The coast consists of moderate to steep slopes alternating with stretches of low, level, muddy or sandy shore; the latter are most extensive at the heads of the indentations. The slopes rise directly from the water around the promontories, but elsewhere they are fronted in places by narrow sandy beaches (beach area (205)). There is a short stretch of cliffs east of the south end of the military wall which crosses the middle of the island from north to south.

The slopes are backed by rolling to rugged hills and low but steep mountains. Behind the low level stretches are narrow alluvial strips, or alluvial flats. The flats occupy the lower parts of the valleys and generally are located at the heads of the bays and bights. The hills and mountains are covered with grass, brush, scrub pine, and pine trees. There are deciduous orchards around most of the villages. The alluvial areas are planted chiefly to irrigated rice and grain. Several villages, connected by trails, are located on the coastal flats or short distances inland up the valleys.

The eastern part of Kogum-do is the highest, and is conspicuous from seaward; its wooded slopes stand out against the grass- and brush-covered mountains of the mainland to the north.

Sorok-to (Soroku To), lying just north-northwestward of Kogum-do, consists of rolling to steep hills and ridges inter-

spersed with alluvial flats. In 2 places along the north side of the island, the hills terminate in precipitous cliffs. Except along these cliffs and the various promontories, the coast is largely fringed by sandy beaches (beach area (198)). Vegetation is similar to that on Kogum-do; the western half of the island is grass- and brush-covered, but the eastern half is mantled with scrub pine and pine trees.

Ryonho-do (Renko To), off the west side of Kogum-do, consists of 2 wooded ridges joined by a sandy isthmus; the northern ridge is bordered by beaches (beach area (205)); the southern ridge is encircled by reefs.

The other islets consist of brush-covered hills terminating in steep slopes or cliffs.

6

Bottom gradients are largely *steep* to *moderate*, but are *flat* in places; there are depths of 10 fathoms about 1/8 mile to 1 3/8 miles off shore.

Except for a large bay in the central part of the subdivision, the coast is little indented. Most of the indentations are partly filled by drying mud or sand flats. Reefs and rocks border the remainder of the coast.

The coast consists of spurs from the interior alternating with beach-fringed alluvial strips and flats (beach areas (198) and (200)). The spurs terminate in cliffs or in steep to moderate slopes which rise directly from the water.

Inland, rugged hills are covered with grass, brush, scrub pine, and pine trees. Deciduous orchards are located around most of the villages. Some of the alluvial flats are cultivated, but others are sandy and covered with pines.

Small fishing villages, connected by trails, are located on the larger coastal flats.

7

Bottom gradients are *moderate* to *steep* off the west side and eastern extremity of the island, with depths of 8 to 12 fathoms a few hundred feet off shore. Off the northern and southern sides, gradients are *flat*, with depths of less than 3 fathoms extending 1 1/4 miles off shore.

The coast of Tungnyang-do (Togunyan To on U.S.H.O. chart 5456) is little indented. The island consists of a steep hill 806 feet high, which descends to the coast in steep slopes. The slopes rise directly from the water except along the western, southeastern, and part of the northern coasts, where they are fronted by narrow beaches (beach area (199)).

The island is covered with scrub pine and pine trees, except for deciduous orchards and cultivated plots around the villages. Three small fishing villages are located on the western, southern, and northern sides, respectively.

8

Bottom gradients are *flat* to *moderate*. Except off Yongdang-gak (Ryudo Kaku on U.S.H.O. chart 5457), at the western limit of the subdivision, depths are less than 10 fathoms.

The southern part of the coast is indented by a large bay; elsewhere, the bays and coves are small. Most of the coast is fringed by drying mud or sand flats, which fill most of the large bay and completely fill some of the smaller indentations. The few short stretches where drying flats are absent are bordered by reefs and rocks.

The coast consists of spurs from the inland hills alternating with alluvial flats and strips. The spurs commonly terminate in steep to moderate slopes, some of which are fronted by narrow beaches (beach area (201)); in a few places, however, the ridges end in rocky cliffs. The alluvial flats have low, level shores which generally are bordered by sandy beaches; the largest flat leads inland from the southeastern side of the large bay.

Inland, steep hills and low rugged mountains are covered with grass, brush, scrub pine, and pine trees. The alluvial areas are cultivated. A few villages, connected by trails or unimproved roads, are located on the coastal flats, or short distances inland up the valleys.

9

Bottom gradients are *moderate* in the entrance to the bay, but are *flat* within the bay. The entrance has controlling depths of 5 fathoms, but elsewhere depths are generally less than 3 fathoms.

The shores of the bay are indented by several large inlets. Broad drying mud and sand flats border the entire shore and fill the inlets. Along the coast, irregular spur-ridges from the interior are interspersed with alluvial strips or flats. The spurs rise directly from the water in some places, but in others they are fronted by narrow beaches (beach area (201)). The alluvial areas have low, level shores, some of which are bordered by sandy beaches. Beaches are most extensive along the eastern side of the bay.

The largest alluvial flats extend inland from the southeastern side of the bay and from the head of an inlet on the north side of the entrance. The coastal spurs and flats are backed at short distances by steep hills and low rugged mountains.

The uplands are covered with grass, brush, and pine trees, but the alluvial areas are cultivated. A few fishing villages, connected by trails or unimproved roads, are located on the coastal flats or short distances inland.

U-do (U To on U.S.H.O. chart 5457), a small islet near the middle of the bay, consists of a pine-covered hill which terminates in steep slopes.

10

Bottom gradients are *flat*. Depths are less than 3 fathoms except in the channel leading to the bay to the east.

The shores of the large bay are little indented. Drying mud and sand flats fringe the coast and largely fill the bay except for a shallow channel along its eastern side.

An earth embankment has been constructed across the entrance to the bay; it is possible that the mud flats behind the embankment are being reclaimed for farm land.

Around the eastern and western entrances of the bay, there are short stretches of steep to moderate slopes. Elsewhere, the shores are mostly low and level, and are bordered by a nearly continuous sandy beach (beach area (202)). A small area of salt pans, encircled by earth embankments, is present around the northeastern extremity of the bay. West of the salt pans, 3 short stretches of low bluffs occur within 1 mile along the coast. The remainder of the northwestern shore of the bay consists of a narrow belt of sandy waste land interspersed with irregularly shaped salt pans.

Low but steep and rugged mountains surround the bay and reach the shore around the entrance. Along the remainder of

the eastern and western sides, the mountains are fronted by narrow alluvial strips. Along the northwestern side of the bay, alluvial flats and broad, low, flat-topped, gently sloping terraces separate the mountains from the shore. Where the terraces reach the coast, they terminate in the low bluffs mentioned above. The mountains are covered with grass, brush, scrub pine, and pine trees; the alluvial areas and terraces are cultivated.

Several villages and small towns, connected by trails, are located on the lowlands around the bay. A railroad and an improved highway roughly parallel the northwestern side of the bay at distances of a mile or less inland.

11

Bottom gradients are largely *flat*, and in most places depths of less than 3 fathoms extend $1\frac{3}{4}$ to $2\frac{1}{4}$ miles off shore.

The coast is little indented. Drying mud or sand flats fringe almost all the coast, and fill the small bights and coves.

Moderate to steep slopes alternate with shorter stretches of low, level, muddy or sandy shore. In some places, the slopes rise directly from the water, but locally they are fronted by narrow beaches (beach areas (203) and (204)). The low, level stretches generally are bordered by sandy beaches.

The slopes are backed by rugged hills and low mountains, and the low, level sections by alluvial flats; the latter inter-finger with the mountains in the interior. The uplands are mantled with grass, brush, scrub pine, and pine trees; the alluvial areas are cultivated. Deciduous orchards commonly are present around the villages.

Several villages, connected by trails or unimproved roads, are located on the coastal flats or on the lower, gentler hill slopes adjacent to the flats.

12

Bottom gradients are largely *flat*. Depths of 3 fathoms or less extend from $\frac{3}{4}$ mile to nearly 4 miles off shore.

The coast is considerably indented, and is almost entirely bordered by broad drying mud or sand flats, which fill the indentations.

The coast consists of spurs from the inland mountains, alternating with alluvial flats. The spurs mainly terminate in steep to moderate slopes; the slopes commonly rise from the water's edge, but locally they are fronted by narrow beaches (beach area (208)). In a few places, the spurs end in precipitous cliffs rising directly from the shore. The alluvial areas have low, level shores; generally, they are bordered by sandy beaches, but in places they have muddy coasts which are partly fringed by earth embankments.

The largest alluvial areas extend as much as $4\frac{1}{4}$ miles inland from the heads of the indentations. Both the alluvial flats and the coastal spurs are backed by low steep mountains. The spurs and mountains are covered with grass, brush, scrub pine, and pine trees; the alluvial areas are planted to irrigated rice and grain. Deciduous orchards grow around most of the villages, which are located on the coastal flats and connected by trails or unimproved roads.

Several hilly islets, terminating in steep slopes, lie off the coast. Locally, the slopes are fronted by narrow sandy stretches. Changgot-to (Chokan To on U.S.H.O. chart 5456) consists of small hills connected by low, narrow, sand necks. Vegetation on the islets is similar to that on the hills of the mainland.

13

Bottom gradients around Tok-to (Toku To on U.S.H.O. chart 5456), Noryok-to (*Rōryoku-tō*), and Usan-do largely are *flat*, except off the southeastern tip of Noryok-to, where depths of 9 to 10 fathoms lie about 1/10 mile off shore. Depths of more than 3 fathoms are charted only off the eastern sides of the islands, and between the 2 southern islands and the mainland.

The coasts are moderately indented. The islands are almost surrounded by drying mud or sand flats. Most of the promontories are fringed by reefs.

The islands consist of rugged hills terminating in steep to moderate slopes and a few stretches of low cliffs. The slopes

and cliffs commonly rise from the water's edge on Tok-to (Toku To), but on Noryok-to many of them are fronted by narrow sandy stretches. In places, the coastal slopes are interrupted by small alluvial flats, which are fronted partly by sandy stretches and partly by earth embankments.

The hills on Tok-to (Toku To) are mantled with scrub pine, and those on Noryok-to with pine trees. The alluvial flats are cultivated, except for a few composed of sand. Deciduous orchards grow around some of the villages.

Several settlements, connected by trails, are located on the alluvial flats and on the lower, gentler hill slopes.

(2) *Landing beaches.*

TABLE IV - 24

LANDING BEACHES OF COASTAL SUBSECTOR 42 G
Reliability FAIR. (PLANS 21 and 22)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(195) Naeraro-do, Oeraro-do, and island to NW. (PLAN 21)	Bottom <i>flat</i> ; part of approach channeled.	Many short beaches; average 0.5 mi.	25 to 50 ft.	1 on 10.	Surf moderate on S, light on N.	Sand and pebbles.	Steep hill slopes of rugged islands.	Trails; islands connected to each other and to mainland by short ferry crossings.
(196) Peninsula W of Naeraro-do. (PLAN 21)	Bottom <i>flat</i> ; obstructed; some mud flats.	Many short beaches; average 0.2 mi.	15 to 25 ft.	1 on 10.	Wide belt of heavy surf with E and SE winds.	Sand and pebbles.	Steep slopes of mountainous peninsula.	Trails within 1 mi. of most beaches lead to Kohung 10 mi. inland.
(197) Peninsula NE of Kogum-do. (PLAN 21)	Partly obstructed; fronted by mud flats.	Much interrupted strip beach; total approx. 7 mi.	15 to 25 ft.	1 on 10.	Surf moderate.	Sand, pebbles, and mud.	Steep slopes; swamp on NW.	Trails and poor roads lead to Kohung.

TABLE IV - 24 *Continued*

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(198) Vicinity of Kwan-ni. (PLAN 21)	Approach channeled; beaches fronted by mud flats.	Many short beaches; average 0.5 mi.	15 to 25 ft.	1 on 15.	Surf generally light.	Sand, pebbles, and mud.	Hill slopes; small valleys in rice.	Island isolated; trails on mainland lead over hills to Kohung, about 10 mi. inland.
(199) Tungnyang-do. (PLAN 21)	Approach channeled; nearshore clear on W, flat on S.	3 beaches; all less than 1 mi.	15 to 25 ft.	1 on 10.	Surf moderate.	Sand, pebbles, and mud.	Steep slopes; some terraced rice.	Trail parallels shore within ¼ mi., circling island.
(200) NW of Yongdong-ni. (PLAN 21)	Partly obstructed; mud flat on S.	2 beaches; 0.8 and 0.4 mi.	10 to 20 ft.	1 on 5.	Surf moderate.	Sand and pebbles.	Steep hill slopes at end of long narrow peninsula.	Trail skirts shore.
(201) E shore of Tungnyang-man. (PLAN 21)	Approach channeled; fronted by mud flats.	Much interrupted strip beaches; total approx. 17 mi.	10 to 20 ft.	1 on 15.	Surf light.	Sand and pebbles.	Hill slopes; a few small valleys terraced in rice.	Trail parallels shore within ½ mi.; R.R. 3½ mi. N of N beaches.
(202) N shore of Tungnyang-man. (PLAN 21)	Fronted by mud flats; mud flat area may now be entirely reclaimed.	Nearly continuous strip beach; 10 mi.	20 to 40 ft.	1 on 15.	Surf light.	Sand and mud; soft.	Small sloping coastal strip as much as 1 mi. wide, backed by hills and mountains.	R.R. and highway skirt N part of beach; elsewhere, trails skirt shore.
(203) SE of Posong. (PLAN 21)	Approach channeled; fronted by mud flat averaging 600 ft. wide.	Strip beach; 9 mi.	Average 10 to 20 ft.	1 on 10.	Surf moderate with SW winds.	Sand and pebbles.	Generally backed by steep slopes; small river valley near W end of beach area.	Trail skirts shore; Posong, town on R.R. and main roads, is 8 mi. inland.
(204) Vicinity of Sachon-ni. (PLAN 21)	Approach channeled; mud flat fronts beaches.	Several beaches; 0.3 to 1.5 mi.	25 to 50 ft.	1 on 15.	Surf moderate.	Sand, pebbles, and mud.	Alternate hill slopes and small flats in rice backed by hills.	Trails and poor roads within 1 mi. of shore lead 8 to 10 mi. inland to Posong.
(205) Kogum-do and small island to W. (PLAN 21)	Generally obstructed or with flat near shore; mud flats on W and N.	Many beaches; 0.2 to 1.8 mi.	10 to 20 ft.	1 on 10.	Surf moderate on S; light on W and N.	Sand and pebbles; some large boulders.	Steep hill slopes of mountainous island.	Trail either skirts shore or is within ¼ mi.
(208) SE of Changhung. (PLAN 22)	Approach channeled; fronted by mud flats.	Several beaches less than 1 mi.; one 3 mi.	10 to 20 ft.	1 on 20.	Surf light.	Sand, pebbles, and mud.	Hill slopes, partly terraced in rice.	Trails parallel shore.

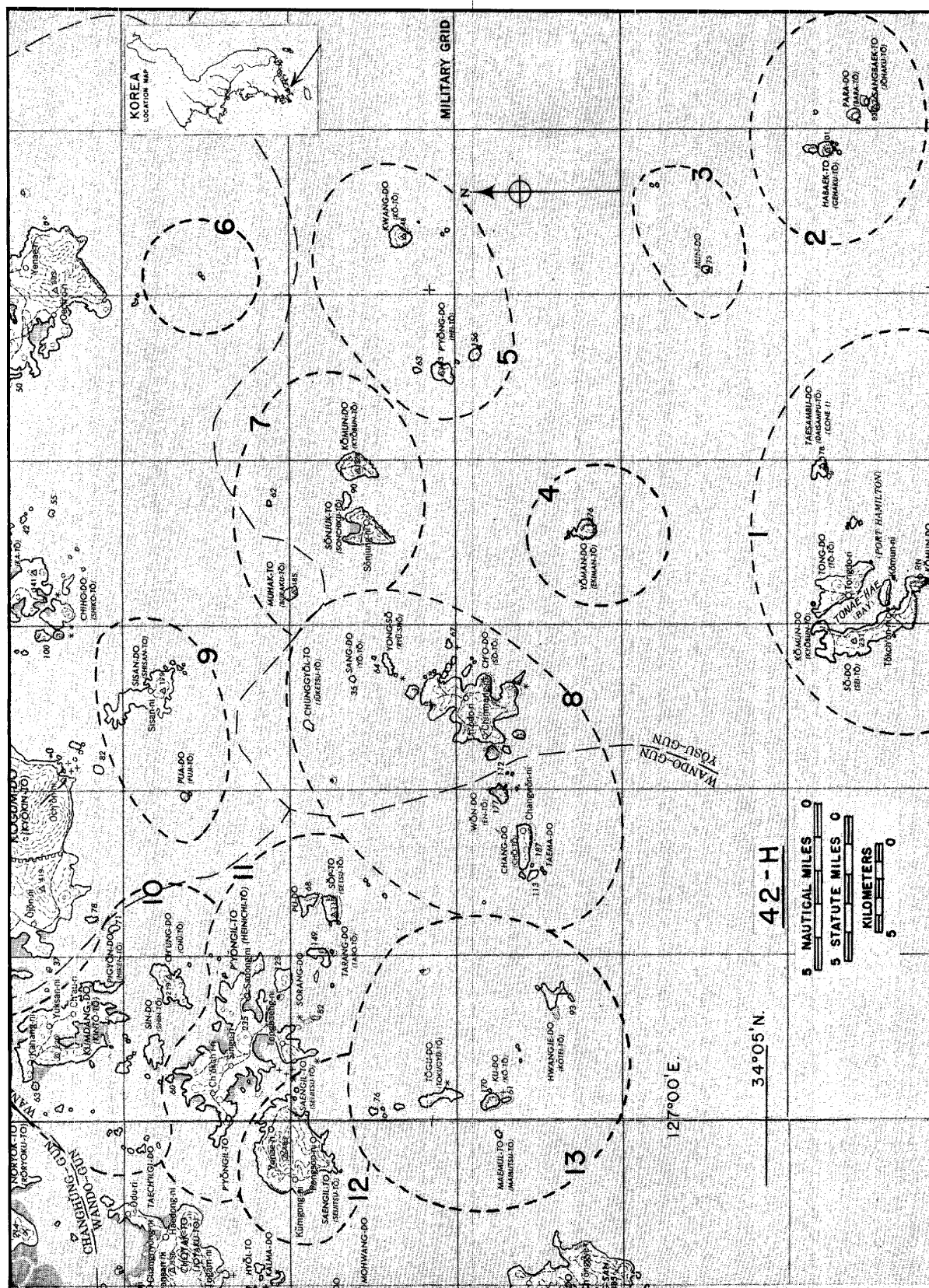


FIGURE IV - 109. Coastal subsector 42 H.
Beach areas are shown on PLANS 21 and 22.

H. Kumdang-do (*Kintō-tō*), Komun-do (*Kyobun-tō*), Sangbaek-to (*Jōbaku-tō*), Kwang-do (*Kō-tō*) and adjacent islands.

(Approximately 34°00'N to 34°30'N, and 126°55'E to 127°37'E)

(PLANS 21 and 22; FIGURE IV - 109; U.S.H.O. charts V3-36, 3239, 3240, 5456, 5457, and 5494)

(1) Coast.

Bottom gradients range from *steep* to *mild*. The coasts of the islands generally are fringed by reefs and rocks, but in places they are bordered by drying mud or sand flats.

The smaller islets consist of hills terminating in steep slopes or cliffs. The coasts of the larger islands are made up of slopes or cliffs interrupted around the heads of the indentations by beach-fringed alluvial flats.

The interior of the larger islands consists of steep hills and low rugged mountains covered chiefly with grass, brush, and scrub pine. The alluvial flats along the coasts are cultivated. Villages, connected by foot trails, are located on most of these flats.

1

Except in Tonae-hae (*Tōnai-kai*, Port Hamilton) (U.S.H.O. chart 0138) and some of the larger bays, bottom gradients are *steep*. The 10-fathom line practically coincides with the coast-line off some of the promontories, but lies as far as 1½ miles off shore in Tonae-hae. The 20-fathom line lies from 1/16 mile to 1¾ miles off shore. The bottom near shore consists mainly of rock with numerous patches and strips of gravel, sand, and shells; off shore, patches of mud are interspersed with these materials. The deeper parts of Tonae-hae are floored largely with mud.

The coasts of the islands are considerably indented. In Tonae-hae (*Tōnai-kai*), and in many of the other bays, narrow drying sand or mud flats fringe the coast. Elsewhere, there are reefs and rocks. Except in Tonae-hae, the coasts consist principally of precipitous rocky cliffs which rise directly from the water's edge. In Tonae-hae and around the heads of some of the indentations, steep to moderate slopes rise from the shore or behind narrow sandy beaches (beach area (207), TABLE IV - 25). The eastern and northeastern sides of Ko-do (*Kō-tō*), the large island in the entrance of Tonae-hae, are cliffed, but the other sides terminate in slopes. At intervals, the cliffs and slopes are broken by steep, short, narrow valleys; the larger valleys have beach-fringed alluvial flats or patches at their mouths.

The inland terrain consists of rugged hills covered chiefly with a dense growth of deciduous brush and trees; the woods are interspersed with patches of grass. The alluvial flats and the lower, gentler hill slopes are intensively cultivated. Several villages are located on the alluvial flats around the shores of Tonae-hae (*Tōnai-kai*) and at the heads of some of the bays. The settlements are connected by foot trails and unimproved roads.

There are several conspicuous landmarks. Hsuwol-san (Gosuietsu San, Triangle Peak) is connected to the southern extremity of So-do (*Sei-tō*) by a narrow isthmus. Tong-do (*Tō-tō*), on the eastern side of Tonae-hae (*Tōnai-kai*), is surmounted by 3 peaks; Mangch'i-san (Boji San), the highest, is 784 feet high. The hilly islets, Sosambu-do (Shosanpu To,

Chosampu To, Mosquito Islands) about 1¼ miles eastward of Tong-do, are encircled by cliffs; the southernmost islet has a brownish summit. Taesambu-do (*Dai-sambu-tō*) consists of 3 islets, the largest of which is surmounted by a prominent conical peak; the islets are encircled by low, steep, rocky cliffs.

2

Bottom gradients are *steep*, with depths of more than 30 fathoms ¼ to ½ mile off shore (U.S.H.O. chart 3240). The islets, encircled by rocks and reefs, consist of rugged hills terminating in steep cliffs.

The 3 southeasternmost islets, Paek-to (*Haku-tō*), resemble castle turrets in profile. Habaek-to (Sencho To) lies about 1 mile northwestward of Paek-to. The southern of the 2 islands of this group is pyramidal in shape, and culminates in a summit 476 feet high. Tong-am (Tonpaku), a rock 124 feet high, lies about 1 mile eastward of Habaek-to.

The summits of the larger islets in this subdivision are covered with brush and deciduous trees.

3

Bottom gradients off Mun-do (Tanri To on U.S.H.O. chart 3240) and Mun-so (Gan To, Powell Rock) are *steep*, with depths of 27 fathoms or more about ⅓ mile off shore.

Mun-do consists of a grass-covered hill, 330 feet high, which terminates in steep rocky cliffs. Reefs and rocks fringe the foot of the cliffs. A conspicuous pointed rock, 60 feet high, lies close off its eastern end.

Mun-so consists of 2 pinnacle rocks lying close together, and is surrounded by reefs and smaller rocks. The larger of the pinnacle rocks is 73 feet high.

4

Bottom gradients off Yongman-do* range from *steep* to *moderate*. The 10-fathom line coincides with the coastline in some places, but in others lies as far as ½ mile off shore. The 20-fathom line lies from a few hundred feet to a little more than ½ mile off shore.

At the northern end of the island is a small grass-covered conical hill, 372 feet high, which is joined to the southern and larger part of the island by a narrow sandy isthmus. The southern part of the island consists of a steep hill, 704 feet high, which has a flat wooded summit. This southern part is almost encircled by rocky cliffs rising from the water's edge; the cliffs give way to hill slopes only around the southern end of the sandy isthmus. Except for its wooded summit, the island is grass-covered. Yongman-do probably is uninhabited.

Rocks above and below water extend about ⅓ mile northwestward from the northern tip.

5

Bottom gradients range from *steep* to *moderate*. In some places, the 10-fathom line nearly coincides with the coastline, but in others it is as far as ⅓ mile off shore. Depths of more than 19 fathoms are not charted around the islands.

The islands are bordered by rocks and reefs. They consist of rugged hills terminating in steep slopes; the slopes generally rise directly from the water. Kwang-do (Notsupuri on U.S.H.O. chart 5457) and Ku-do (Karukui To), the southernmost

* Yoman-do on PLAN 21, Yokuman To on U.S.H.O. chart 5457.

island, are covered chiefly with brush and deciduous trees, but the remaining islands are mantled with grass.

A projecting point on the western side of Kwang-do forms a natural breakwater. Near this point there is a small village; much of the surrounding land is under cultivation.

There is a possible landing place on the western side of P'yong-do (*Hei-tō*), where there is a small village fronted by a sandy beach.

There are several conspicuous landmarks. Soduyok-so (Kyu-toeki Jo) is a steep rock 88 feet high about 1/2 mile southeastward from Kwang-do's southeastern point. Taeduyok-so (Dai-toeki Jo), about 1 mile southward of Kwang-do, consists of 2 dark rocks. A detached white rock lies close off the southeastern extremity of Ku-do (Karukui To), and a dark rock lies about 1/8 mile off the island's southern side. Between Ku-do and P'yong-do is a small dark rock, Huktung-yo (Komutsun Yo).

6

Bottom gradients off T'anggonu (Tokonjo To on U.S.H.O. chart 5457) are *steep* to *moderate*. The 10-fathom line lies from 300 feet off shore on the east side of the islet to nearly 1/2 mile off shore on the west side. Depths of more than 13 fathoms are not charted. The islet is fringed by a wave-cut rocky shelf and is bordered on its southern side by off-lying rocks.

T'anggonu (Tokonjo To) consists of a conical hill, 126 feet high, which terminates in high rocky cliffs. The islet probably is uninhabited.

7

Bottom gradients are *steep* to *moderate*. In some places, the 10-fathom line coincides with the shoreline, but in others it is 2 1/4 miles off shore.

The islands are mostly fringed by reefs and rocks. They consist of rugged hills which commonly terminate in steep slopes. Short stretches of cliffs are present along the east side of Sonjuk-to (*Sonchiku-tō*) and along the southern extremity of Komun-do (Komun To). The slopes and cliffs largely rise from the water's edge. However, the slopes on the northwestern side of Komun-do are fringed by a narrow sandy beach (beach area (207)). In a few places on Sonjuk-to and Komun-do, the slopes are broken by small beach-fringed alluvial patches at the ravine mouths. There is another possible landing place on the northeastern side of Muhak-to (*Bukaku-tō*), where a narrow sandy stretch fronts the shore.

The interior of the islands consists of rugged hills which, on the larger islands, are cut by short, steep, narrow ravines. Vegetation on the hills consists of grass with scattered groves of pine and deciduous trees. The few small alluvial patches are cultivated. Small fishing villages are located on these flats; one settlement is built on the hill slopes on the east side of Muhak-to.

8

Bottom gradients are largely *steep*, but are *mild* off the western side off Ch'o-do (Cho To on U.S.H.O. chart 5457). In places, the 10-fathom line is only a few hundred feet off shore, but westward of Ch'o-do and Won-do (*En-tō*) depths greater than 10 fathoms are not charted.

The islands commonly are fringed by reefs and rocks. The coast of the largest island, Ch'o-do, is considerably indented.

In most places, the coasts of the islands consist of moderate to steep slopes interspersed with short stretches of cliffs. The slopes generally rise directly from the water, but locally they are fronted by narrow sandy beaches (beaches area (207)). On the larger islands, the slopes are broken at the heads of the indentations by small beach-fringed alluvial flats.

Inland, rugged hills are covered largely with grass, brush, and pine trees. The hills of the larger islands are cut by short, steep, narrow ravines, some of which have alluvial patches at their mouths. At the heads of the principal indentations, the alluvial patches have coalesced to form narrow alluvial flats. The alluvial areas and the lower, gentler hill slopes are cultivated. Several villages connected by foot trails are located on the alluvial flats on Ch'o-do.

There is a small drying sand flat off the northern side of Won-do; another such flat ties a small island to the west side of Ch'o-do.

Conspicuous landmarks include Sunggan-do (Sunkun To), a reddish pointed rock 3 1/2 miles north-northeastward of Ch'o-do; Chunggyol-to (*Jūketsu-tō*; Chiyunkiyoru To on U.S. H.O. chart 5457), a brush-covered islet about 4 miles northward of Ch'o-do; and Tongam-do (Togan To), a small black flat-topped rock about 3 miles northwestward of Ch'o-do.

9

Bottom gradients range from *flat* to *steep*. In some places, depths of 10 to 11 fathoms lie within a few hundred feet of the ends of the promontories, but off the western side of Sisan-do (Shisan To on U.S.H.O. chart 5457) depths of 3 fathoms or less extend nearly 1 mile off shore.

The coast of Sisan-do is deeply indented. The heads of most of the bays and coves are bordered or filled by drying mud or sand flats. Elsewhere, the coast is largely fringed by reefs and rocks.

Steep to moderate slopes rise directly from the water around most of Sisan-do. Around the heads of the indentations, the slopes are interrupted by small beach-fringed alluvial flats (beach area (196)). A short stretch of cliffs fringes the northern entrance point of the large bay in the east-central coast of the island.

The inland terrain on Sisan-do consists of rolling to rugged hills covered with grass, brush, and scrub pine. Several short steep valleys, some of which are floored with alluvium, lead inland from the heads of the indentations. The alluvial areas are intensively cultivated. Two villages are located on the shores of the bays on the west-central and east-central sides of the island, respectively; a conspicuous wooded slope backs the eastern village.

Pua-do (Pujaa To on U.S.H.O. chart 5457) consists of a small conical brush-covered hill which terminates in steep slopes. The islet is encircled by reefs.

10

Bottom gradients range from *flat* to *steep*. In some places, as along the east side of Kumdang-do (Kumudan To on U.S. H.O. chart 5456), the 10-fathom line practically coincides with the coastline; in others, as on the west side of Kumdang-do, depths are less than 5 fathoms for 7/8 mile off shore.

The coasts of the islands are considerably indented. Drying mud or sand flats border much of the shore and fill many of the

bays and coves (beach area (206)). Elsewhere, the islands commonly are fringed by reefs and rocks.

Most of the coast of Kumdang-do and the larger islands consists of moderate to steep slopes which rise directly from the water or are fronted by short narrow sandy beaches (beach area (206)). Three short stretches of cliffs are present along the east side of Kumdang-do. Around the heads of the indentations, the slopes are fronted by small beach-fringed alluvial flats.

The interior of the larger islands is made up of rugged hills, cut by short, steep, shallow ravines. Larger valleys, floored with alluvium, lead inland from the heads of most of the bays. Scrub pine, interspersed with patches of grass and scattered pine trees, mantles the hills. The alluvial areas are cultivated. Along the coast, and inland on Kumdang-do, several villages are located on the alluvial flats. The settlements are connected by foot trails.

Ch'ung-do (Chun To) has a flat summit and is sparsely wooded. The northeastern point of the island terminates in a steep cliff. The smaller islets consist of brush- or pine-covered hills terminating in steep to moderate slopes.

11

Bottom gradients range from *steep* to *flat*. In a few places, depths of 10 fathoms or more lie immediately off the promontories, but generally the 10-fathom line is $\frac{1}{8}$ mile to about 3 miles off shore.

The coast of P'yongil-to (Peniru To on U.S.H.O. chart 5456) is greatly indented. Drying mud or sand flats border most of the shore and partly or completely fill the indentations. Elsewhere, the islands commonly are fringed by reefs and rocks.

On P'yongil-to, short stretches of steep to moderate slopes alternate with beach-fringed alluvial flats (beach area (206)). The slopes either rise from the water or are fronted by narrow sandy beaches. The numerous hilly peninsulas are tied to the main body of the island by narrow sandy beach-bordered necks of land.

Inland, rugged to rolling hills interfinger with alluvial flats in the larger valleys. The hills are covered with scrub pine, interspersed with patches of grass, brush, and scattered pine trees. The alluvial areas are cultivated. Several villages, connected by foot trails, are located on the alluvial flats.

The islets in this subdivision are hilly; they terminate in steep slopes and cliffs which locally are fronted by beaches (beach area (206)). Vegetation is similar to that on P'yongil-to, except that a few deciduous trees are present in places.

12

Bottom gradients off Saengil-to (Sanniku To on U.S.H.O. chart 5456) range from *steep* to *mild*; the 10-fathom line practically coincides with the coastline on the southwestern and northeastern tips of the island, but elsewhere is as much as $1\frac{1}{2}$ miles off shore.

The coast is not greatly indented. Some of the small bays and bights are bordered by narrow drying mud or sand flats, but elsewhere the coast is fringed by reefs and rocks.

Most of the coast consists of steep to moderate slopes rising directly from the water; locally, the slopes are bordered by

short, narrow sandy beaches (beach area (211)). The coastal slopes are steep on the west side of Saengil-to, but are more gradual on the east side. The slopes terminate in precipitous cliffs along 2 short stretches on the southwestern side. Around the heads of most of the indentations, the slopes are fronted by small beach-fringed alluvial flats.

Inland, there are steep rugged hills and low mountains. Short, steep, narrow ravines or valleys, most of which have alluvial patches at their mouths, lead inland from most of the bays and coves. Several fishing villages, connected by foot trails, are located on the coastal flats. The alluvial flats are cultivated; the remainder of the island is covered with brush, grass, and deciduous and pine woods.

The mountains culminate in 2 distinct peaks; the northern and higher has a comparatively flat top. The southern peak, densely wooded and dark in color, has the appearance of a pair of breasts.

Several islets and rocks, hilly and brush-covered, lie off the southeastern side of Saengil-to.

13

Bottom gradients are largely *moderate* around Ku-do (Karku To on U.S.H.O. chart 5456), Togu-do (Toayu To) and the islets northward of Togu-do. Around the other islets, the gradients are *steep* to *moderate*. The 10-fathom line coincides with the coastline in places on Hwangje-do (Hanchei To) and Maemul-to (Mamuri To), but east of Togu-do depths greater than 10 fathoms are not charted.

The islets are hilly. Ku-do, densely wooded and dark-colored, is encircled by precipitous cliffs. Similar cliffs occur on the northeast tip of Hyongje-do (Choko To), on the north and west sides of Sodogu-do (Wonyu To), and on the south side of Maemul-to. Elsewhere, the coasts consist of moderate to steep slopes which either rise directly from the shore or are fronted by narrow sandy stretches. The most extensive sand areas fringe the west-central and east-central sides of Togu-do, and the southeastern and eastern sides of Hwangje-do (beach area (207)).

The hills behind the coasts are covered with grass, brush, and scattered pine trees or woods. Fishing villages are located on the east side of Hwangje-do, and on the northern part of Togu-do.

The 2 small islets on the southeastern side of Hwangje-do are joined to the mainland by a broad, low sandy neck which is submerged at high water.

Other conspicuous landmarks include Song-do (Son Somu), a brush-covered islet about $\frac{1}{3}$ mile southward of Ku-do, encircled by cliffs except on its northwestern side; a black conical rock stands about $\frac{1}{2}$ mile southeastward of the islet. Because of the low ridge forming the central part of Togu-do, the islet shows 2 distinct peaks when viewed from eastward or westward; the southern part of the island is wooded. Hyongje-do (Choko To), about $\frac{1}{2}$ mile northward of Togu-do, consists of 3 islets lying so close together that from a distance they appear as one; the northern and southern islets are densely wooded. Sodogu-do (Wonyu To) is a conical islet, densely wooded, about $1\frac{1}{2}$ miles northward of Togu-do.

(2) *Landing beaches.*

TABLE IV - 25

LANDING BEACHES OF COASTAL SUBSECTOR 42 H
Reliability FAIR. (PLANS 21 and 22)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(206) P'yongil-to, Kumdang-do, and neighboring islands. (PLAN 21)	Obstructed, or fronted by mud flats.	Many pocket beaches; average 0.4 mi.	10 to 20 ft.	1 on 10.	Surf generally light.	Sand and pebbles; some large boulders.	Steep slopes and narrow valleys of rugged islands.	Trails.
(207) Ch'o-do, Tong-do, and neighboring islands. (PLAN 21)	Generally partly obstructed or channeled.	Pocket beaches; average 0.3 mi.	10 to 20 ft.	1 on 10.	Surf moderate to light.	Sand and pebbles.	Steep slopes and narrow valleys of rugged islands.	Some trails.
(211) Wan-do and islands to E. (PLAN 22)	Generally obstructed; channeled or fronted by mud flats.	Many short beaches; average 0.5 mi.; max. 1.8 mi.	10 to 20 ft.	1 on 10.	Surf generally light.	Sand and pebbles; many may also be muddy.	Steep slopes, many of them terraced, of rugged islands.	Trails skirt backs of most beaches; improved road on E coast of Wan-do; ferries connect islands; also connect across narrow straits to mainland.

I. Eastern entrance point of Shallow Bay to Haenam-gak (*Kainan-kaku*).

(34°27'N, 126°56'E; 34°17'N, 126°31'E)

(PLAN 22; FIGURE IV - 110; U.S.H.O. charts V3-36, 3239, 5455, and 5456)

(1) *Coast.*

Bottom gradients off this subsector generally are *moderate to flat*. The 10-fathom line lies on the seaward side of the off-lying islands; depths within the line are less than 3 fathoms over large areas around the islands and in the estuaries.

The coast is deeply indented. Broad drying mud flats border almost all the shore, and partially or completely fill the indentations; elsewhere, the shore commonly is rocky.

The coast is hilly to mountainous; it consists of steep to moderate slopes and cliffs alternating with short stretches of low, level, muddy or sandy shore. The slopes generally rise directly from the water, but locally they are fronted by narrow beaches.

The slopes and cliffs are backed by rugged hills and low steep mountains, and the low, level stretches by alluvial flats, the largest of which leads inland from Kangjin (*Kōshin*) (34°38'N, 126°46'E). The uplands are covered mostly with conifers, brush, and grass, while the alluvial areas are intensively cultivated.

Kangjin (*Kōshin*) and Wando, about 23 miles southward, are the only settlements of any size; the former is served by an improved highway. Several villages, connected by unimproved roads or trails, are located on the coastal flats.

The coasts and inland terrain of the larger islands are similar to those on the mainland. The islets consist of brush-covered or wooded hills terminating in steep to moderate slopes.

1

Bottom gradients range from *flat* in the bays to *steep* off the promontories. Depths of 10 fathoms lie 1/8 mile to 4 miles off shore.

The coast is greatly indented; except off a few of the promontories, it is bordered by drying mud flats which fill the bays.

The coast consists of steep to moderate slopes alternating with alluvial strips and flats. The slopes generally rise directly from the water, but in a few places they are fronted by narrow sandy beaches (beach area (209), TABLE IV - 26). The alluvial areas have low, level, muddy shores partly fringed by earth embankments.

The terrain inland consists chiefly of rugged irregular hills and low mountains. Valleys floored with alluvium lead inland from the heads of the indentations. The hills and mountains are covered with grass, brush, and conifers; the alluvial areas are planted to irrigated rice or grain.

Several villages, connected by trails and unimproved roads, are located on the coastal flats.

2

Bottom gradients around Choyak-to range from *flat* in the bays to *steep* off the promontories. Depths of more than 10 fathoms lie from a few hundred feet to 1 3/8 miles off the coast.

The coast is considerably indented; it is mostly fringed by drying mud flats which fill many of the bays. The coast is rocky along the promontories on the southeastern and western sides.

The coast consists mainly of steep to moderate hills which generally rise from the shore; in places, however, they are fronted by narrow beaches (beach area (211), TABLE IV - 25). At intervals, the slopes are interrupted by small alluvial flats or strips, many of which are fringed by sandy beaches; one flat on the west side of the large bay in the southwestern coast is bordered by an earth embankment.

Inland, rugged hills and low mountains interfinger with alluvial flats, adjacent to the coast. The flats are most extensive on the northern side of the island. Vegetation on the uplands consists of grass, brush, and conifers; the alluvial flats are cultivated. Several fishing villages, connected by trails, are located on the coastal flats.

Choyak-to culminates in 2 mountains. The western and higher mountain is a flat-topped ridge; the eastern is pointed and conspicuous.

The off-lying islets are hilly and brush-covered, and terminate in steep slopes.

Confidential

COASTS AND LANDING BEACHES

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FIGURE IV - 110. Coastal subsector 42 I.
Beach areas are shown on PLAN 22.

3

Bottom gradients around Sinji-do (*Shinchi-tō*) generally are *gentle*, but are *steep* off some of the promontories. The 10-fathom line lies $\frac{1}{8}$ mile to $2\frac{3}{4}$ miles off the south and east sides of the island. On the west and north sides depths are irregular, with controlling depths of 6 fathoms in Changjingno (Long Reach), the channel to the north, and 5 fathoms in the channel between Sinji-do and Wan-do. The coast is considerably indented. Drying mud flats partially or completely fill the bays on the north and east coasts; reefs and rocks fringe part of the coast elsewhere.

The coast consists of moderate to steep slopes and cliffs alternating with beach-fringed alluvial flats (beach area (211)). Slopes and cliffs are best developed along the promontories, and the most extensive alluvial flats are located around the heads of the indentations. Cliffs are present locally along the east coast and on the eastern half of the south coast. The slopes and cliffs generally rise from the water's edge, but locally they are fronted by narrow beaches.

The rolling to steep hills and rugged mountains of the interior are interspersed with branching alluvial flats near the coast. The smaller western part of the island is connected with the eastern part by a low ridge. The upland areas are covered with grass, brush, or pine; the alluvial areas are cultivated. A few villages, connected by trails, are located behind the beaches on the coastal flats, or inland up the valleys.

When seen from a distance, Sang-san (San San), the summit of the western part of Sinji-do (*Shinchi-tō*), appears to be a separate island. Hyol-to (Hiyori To on U.S.H.O. chart 5456), the outermost of the islets off the northeastern tip of Sinji-do, has a natural arch at its western extremity which is conspicuous from southward.

4

Bottom gradients around Kogum-do (*Kokon-tō*; Kugin To on U.S.H.O. chart 5456) are *flat to moderate*; depths off the southern and northwestern sides of the island generally are less than 3 fathoms.

The coast of the island is deeply indented. Drying mud flats fringe all but the northwestern side of the island and partly or completely fill the bays and bights. Most of the promontories are fringed by rocky shelves or reefs.

The coast consists mainly of steep to moderate slopes interspersed with shorter stretches of alluvial flats. The slopes generally rise directly from the shore, but in places they are fronted by narrow beaches (beach area (211)). Short stretches of cliffs occur on the east and south coasts. Most of the alluvial flats are bordered by sandy beaches, but those along the east coast are fringed mainly by earth embankments and diked salt pans.

The rugged hills inland are interrupted near the shore by alluvial flats which are most extensive along the heads of the indentations on the east and south coasts. The hills are covered with grass, brush, and conifers; the alluvial areas are cultivated in irrigated rice and grain. The conspicuous southwest-point of Kogum-do is densely forested.

Several settlements, connected by trails, are located along the margins of the coastal flats.

5

Bottom gradients are *flat*, and depths do not exceed 6 fathoms.

The coast is little indented; it is bordered throughout by drying mud flats which fill the coves, and fill the entire inlet north of Songno-ri.

Along the coast, hills rising directly from the water alternate with extensive alluvial flats. In some places, the flats are bordered by sandy beaches (beach area (209), TABLE IV-26), but in others they have low muddy shores. There is a small marshy area around the delta of the Tamjin-gang at the northern extremity of the subdivision.

Inland, rugged irregular hills interfinger with branching alluvial areas; the largest alluvial plain surrounds the mouth of the Tamjin-gang. The hills are covered with grass, brush, and pine trees; the alluvial areas are cultivated in irrigated rice and grain.

Several villages and small towns, connected by an unimproved road, are located on the coastal flats.

Kau-do, an island near the middle of the subdivision, consists of a small brush-covered hill terminating in steep to moderate slopes.

6

Bottom gradients are *flat*, and depths generally are less than 3 fathoms. The coast is considerably indented; it is almost completely bordered by broad drying mud flats which fill the indentations and the head of the main inlet.

Steep to moderate slopes, interspersed with short stretches of cliffs, make up the coast. The slopes and cliffs generally rise from the water's edge, but locally they are fronted by narrow beaches (beach area (209)). In several places, particularly at the heads of the indentations, the slopes and cliffs are interrupted by alluvial strips and flats; the alluvial areas have low, level, muddy or sandy shores, fringed in part by earth embankments or scattered salt pans.

Inland, rolling to rugged hills are backed by steep mountains. Near the coast, the hills interfinger at intervals with alluvial flats, the largest of which lead inland from the heads of the inlets. The uplands are covered with grass, brush, and conifers; the alluvial areas are planted to irrigated rice and grain.

Several villages, connected by trails, are located on the coastal flats. The only large settlement is Kangjin (*Kōshin*) on the alluvial plain at the northern extremity of the subdivision; it is located on an improved road which parallels the head of the main inlet at a distance of less than a mile inland.

7

Bottom gradients are *flat to moderate*; a maximum depth of 9 fathoms is charted in the channel along the south side of the islands, but the channel shoals rapidly westward; along the northern side of the islands, depths generally are less than 3 fathoms.

The islands consist of low, rolling hills which terminate in steep to moderate slopes. In places, the shore is rocky, but in others the slopes are fronted by narrow sandy beaches (beach areas (209) and (211)). The eastern part of Sahu-do is joined to the main body of the island by a low sandy neck. The hills are covered with grass, brush, and scrub pine. A village is located in the middle of the south shore of Koma-do.

8

Bottom gradients around Wan-do range from *flat* to *moderate*, except off the southeastern extremity of the island. The 10-fathom line lies from 1/10 mile to 1 3/4 miles off the south side; off the east side there are less than 10 fathoms, and off the west side less than 4 fathoms.

The southern part of the island is considerably indented, but elsewhere the coast is fairly regular. Most of the coast is fringed by drying mud flats; along the southern coast, the flats partly or completely fill the indentations, but are absent elsewhere.

The coast consists mainly of steep to moderate slopes rising from the water's edge; there are 2 stretches of cliffs on the south coast. At intervals, the slopes are fronted by narrow alluvial strips or are interrupted by small alluvial flats. The alluvial areas have low level shores, fringed in part by sandy beaches (beach area (211)).

The rugged hills and mountains of the interior culminate in 2 high peaks. The hills and mountains are cut by short, steep, narrow valleys which have small alluvial flats at their mouths along the coast. The hills are covered with deciduous trees, pine trees, and scrub pine, interspersed with brush and grass; the alluvial areas are cultivated.

Wando (*Kantō*), the only large settlement, is located on the southeast coast; it is connected with the villages along the eastern and northern coasts by an improved road. Several settlements, connected by trails, are located on the alluvial flats along the western and southern sides of the island.

9

Except at the western end of this subdivision, bottom gradients are *moderate*; the 10-fathom line lies from a few hundred feet to 1 mile off shore.

The coast is not greatly indented. Between the broad, blunt headlands, it is fringed by drying mud flats.

The coast consists of steep slopes fronted in places by narrow alluvial strips or interrupted by small alluvial flats. The slopes commonly rise directly from the water's edge, but locally they are bordered by narrow beaches (beach area (210), TABLE IV - 26). The alluvial areas have low, level shores; the larger flats are fringed by broad sandy beaches.

The rugged hills inland are cut by short, steep, narrow ravines and valleys. The hills are mantled with grass and brush; the alluvial areas are cultivated. A few fishing villages, connected by unimproved roads or trails, are located on the coastal flats.

Tarumasan Sammyaku (Saw-tooth Range) (U.S.H.O. chart 5455) rises behind Haenam-gak (*Kainan-kaku*), the southwestern point of the Korean peninsula. The range is a conspicuous landmark.

10

Bottom gradients range from *steep* to *moderate*, with the 10-fathom line lying a few hundred feet to 1 1/8 miles off shore.

The coasts are little indented. The islands consist of rugged hills and ridges terminating in steep slopes. The slopes generally rise from the water's edge, but in places they are fronted by narrow beaches (beach area (213), TABLE IV - 27). The hills and ridges on the larger islands are cut by short, steep, narrow ravines. Vegetation consists of grass and brush, with patches of deciduous or coniferous woods.

Small fishing villages, surrounded by cultivated plots, are located on Paegil-to (Hunter Island on U.S.H.O. chart 5455) and Hugil-to (Josling Island). The eastern part of Paegil-to is connected to the main body of the island by a low sandy neck.

(2) Landing beaches.

TABLE IV - 26
LANDING BEACHES OF COASTAL SUBSECTOR 42 I
Reliability FAIR. (PLAN 22)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(209) Narrow bay leading N to Kangjin.	Approach channeled; fronted by mud flats.	Several beaches; longest 1 mi.	10 to 20 ft.	1 on 15.	Surf light.	Sand, pebbles, and mud.	Steep hill slopes or small steep valleys terraced in rice.	Trails and poor roads skirt shore, connect at head of bay to Kangjin, on main road.
(210) S tip of peninsula W of Wan-do.	Fronted by sandy drying flat 1/2 mi. wide. (PLAN 22 probably in error on composition of flat).	3 beaches: 1.0, 0.7, 0.3 mi.	10 to 20 ft.	1 on 10.	Surf moderate.	Sand and pebbles.	Narrow steep valleys in rough hills.	Trails and narrow roads skirt shore; lead 18 mi. inland to large settlement of Haenam.

J. Nohwa-do (*Roka-tō*), Hach'uja-do, Yoso-do (T'aerang-do), Ch'ongsan-do, and adjacent islands.

(Approximately 33°54'N to 34°15'N, and 126°15'E to 126°56'E)

(PLANS 22 and 23; FIGURE IV-111; U.S.H.O. charts V3-36, 3239, 5455, and 5456)

(1) Coast.

Bottom gradients range from *steep* to *flat*, but generally are *steep* to *moderate*. There are many reefs and rocks off most of the islands.

The coasts of the larger islands are considerably indented. In the Soan-kundo (*Shoan-guntō*) group, some of the bays are filled with drying mud flats.

The coasts of the islands and islets consist mainly of steep to moderate slopes or cliffs which rise directly from the water. In a few places, the slopes are fronted by narrow beaches or are interrupted by small beach-fringed alluvial flats.

The slopes and cliffs are backed by rugged hills or low mountains covered with grass, brush, and coniferous or deciduous trees. Most of the alluvial flats on the larger islands lead inland from the heads of the indentations; they are intensively cultivated.

Several fishing villages, connected by trails, are located on the coastal flats, or short distances inland up the valleys.

1

Bottom gradients around Yoso-do (Taro To on U.S.H.O. chart 3239) are steep, with depths of 15 to 20 fathoms within a mile of shore. The coast is steep and rocky.

The island consists of a mountain peak, 1,165 feet high, which terminates in steep slopes and cliffs. The cliffs are confined to its northeastern, eastern, and southern sides. The sides of the peak are cut by several short, steep, blunt ravines. Vegetation consists of grass and brush.

Yoso-ri is a small village at the head of a shallow cove on the north coast; a small beach (beach area (219), TABLE IV-29) fronts the village.

2

Bottom gradients around Ch'ongsan-do (Chunsan To on U.S.H.O. chart 5456) are *steep* to *mild*; off the southeastern extremity of the island the 10-fathom line practically coincides with the coastline, but elsewhere it is as far as 1½ mile off shore. The bottom near shore consists of a mosaic of rock, gravel, sand, mud, and shells.

The coast is considerably indented. Narrow drying mud or sand flats border the heads of most of the indentations, and almost fill a small cove on the east side of the island. Rocks lie off most of the remaining shore.

The coast consists mainly of steep to moderate slopes alternating with short stretches of low, level, beach-fringed shore (beach area (212), TABLE IV-27). A few small stretches of cliffs occur along the promontories on the south coast.

The rugged hills and low mountains of the interior are covered mostly with grass, brush, and conifers. The beach-fringed stretches front cultivated alluvial flats, most of which lead inland from the heads of the indentations. The largest flat extends 1¼ miles inland from a cove in the central part of the east coast. Some of the lower, gentler hill slopes are cultivated.

Several villages, connected by trails, are located on the alluvial flats, either behind the beaches or short distances inland up the valleys.

The off-lying islets around Ch'ongsan-do consist of brush-covered hills or ridges terminating in rock-fringed slopes.

3

Bottom gradients range from *steep* to *gentle*, with the 10-fathom line lying from a few hundred feet to nearly 2¾ miles off shore. Depths of more than 10 fathoms generally are not recorded between Pulgun-do (Burukun To on U.S.H.O. chart 5456) and Soan-do (*Shoan-tō*).

The coasts of the islands are little indented, and commonly are bordered by narrow rocky wave-cut shelves.

Somo-do (Stanley Island) and Taemo-do (Chui To) consist of rugged hills and ridges terminating chiefly in steep to moderate slopes. In most places, the slopes rise directly from the water and are fringed by rocks, but around some of the coves and bights they are fronted by small beach-bordered alluvial patches (beach area (212)). There is a short stretch of cliffs on the southwestern side of Taemo-do. Pulgun-do consists of a narrow ridge terminating in precipitous cliffs and a few short stretches of steep slopes.

Taemo-do culminates in a sawtooth mountain ridge running the length of the island; its slopes are cut by short, steep, narrow ravines. The alluvial patches on the islands are intensively cultivated; the remaining terrain is covered with conifers, brush, and grass. Villages, connected by foot trails, are located on the alluvial patches or gentler hill slopes on Taemo-do, and there is one settlement on the northern slopes of Somo-do. Pulgun-do is uninhabited.

4

Bottom gradients around the Soan-kundo (*Shoan-guntō*) group range from *steep* to *flat*. The 10-fathom line lies from a few hundred feet to about 2 miles off shore. Depths greater than 10 fathoms generally are not charted within the circle of islands, except in the channel west of Soan-do (*Shoan-tō*). The bottom consists chiefly of mud and sand, with rocky patches.

The coasts of the larger islands are considerably indented. The indentations opening on Sado-sudo (Dato Suido on U.S.H.O. chart 5455), the channel through the middle of the island group, and the northern part of Soan-hang (*Shoan-kō*), the bay in the south, are filled with drying mud flats. Drying sand flats fill the bights on the east side of Nae-do (Dopu To).

The coasts of the islands consist principally of steep to moderate slopes, locally interspersed with shorter stretches of rocky cliffs. The slopes generally rise directly from the water, but in a few places they are fronted by narrow beaches (beach area (213)). At the heads of most of the indentations, the slopes are interrupted by small beach-fringed alluvial flats, which are most extensive on Nohwa-do.

Inland, rugged hills and mountains are cut by relatively short, steep ravines. On the larger islands, valleys floored with alluvium lead inland from the heads of some of the bays. The uplands are covered with conifers, brush, and grass except in the southern part of Pogil-to, where deciduous trees predominate. The alluvial flats are intensively cultivated.

Villages, connected by trails, are located on the alluvial flats, either behind the beaches or inland up the valleys.

Soan-do consists of 2 mountainous highlands connected by a low alluvial isthmus which is fringed by beaches (beach area (213)). Pija-ri (Hishi), the principal village in the islands, stands on the western shore of Soan-do near the northern end of the isthmus. The village of Maengson-ni (Mosen), headquarters of the Japanese fishermen, is half hidden by trees about 1 mile southward of the isthmus, on the west side of the island.

Bays indent both the east and southwest coasts of Soan-do. Ch'ongbyon-p'o (Chemben Ko) is the large bay on the east; Ch'ongbyon-gak (Chemben Kaku), a white cliffy point, marks its northern entrance, and Pua-gak (Aheobu Kaku), a steep cliffed promontory, is the southern entrance point. Chinsanni-p'o (Chinsanri Ho) indents the southwest coast; conspicuous landmarks are Ryoemangt'ae-am (Round Rock), off the eastern point of the bay, and Nong-so (Non Yo), off the western point. There are beaches (beach area (213)) at the heads of both bays.

Ku-do (Ko To) and Hangmun-do (Cheki To) lie in the northern and southern approaches, respectively, to Soan-hang (Shoan-kō), the large bay between Soan-do and Pogil-to. The summit and southern slope of Ku-do are somewhat wooded. The northeastern and southeastern points of Hangmun-do terminate in steep cliffs; the southern coast is a high precipitous slope. Ruam-san (Heigan San), a sharp pointed peak in the southern part of the island, is a conspicuous landmark.

Lying off the eastern extremity of Pogil-to, which is joined to the main body of the island by a low, narrow, sandy neck, is Soam-gak (Snake Point), a conspicuous cubical rock.

Nohwa-do is a hilly island, but all its hills are low. Two large bays, filled with drying flats, indent the southeastern coast.

The summit of Hoenggan-do (Hyongan To), the northernmost island of the group, appears flat when seen from the eastward. The southern side of the summit is steep and irregular, and terminates in a cliff 400 feet high.

5

Bottom gradients range from *steep* to *moderate*, with the 10-fathom line lying from a few hundred feet to $\frac{3}{4}$ mile off shore. There are many off-lying reefs and rocks.

The islands consist of rugged hills terminating in steep to moderate slopes and cliffs. The shore commonly is rocky, and on the larger islands is moderately indented. At the heads of the bays and bights on the larger islands, the slopes commonly are interrupted by small alluvial flats.

The hills are covered with grass, brush, and patches of scrub pine; the alluvial areas are cultivated. Small fishing villages, connected by trails, are located on the larger flats.

Conspicuous landmarks include Hoenggan-do (*Ōkan-tō*; Whale Island on U.S.H.O. chart 3239), the northernmost island, which consists of a high ridge with a low saddle in the middle; Sudok-to (Bott Rock), about $1\frac{1}{2}$ miles south-south-eastward of Hach'uja-do, which has a precipitous cliff at its northern end; and Cholmyong-so (Zetsumei Sho), the southernmost islet, consisting of a steep conical rock 159 feet high.

6

Bottom gradients around Changsu-do (Maisonneuve Island on U.S.H.O. chart 3239) are *steep*, with depths of 14 to 34 fathoms about $\frac{1}{4}$ mile off shore.

The island consists of a high ridge with a densely wooded summit which appears nearly flat from every direction. The ridge terminates in rocky cliffs except along its north-central side, where it descends to the shore in moderate slopes.

(2) Landing beaches.

TABLE IV - 27
LANDING BEACHES OF COASTAL SUBSECTOR 42 J
Reliability FAIR. (PLAN 22)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(212) Ch'ongsan-do and Taemo-do.	Fronted by narrow drying flats.	Pocket beaches; average 0.4 mi.	10 to 20 ft.	1 on 10.	Surf moderate.	Sand and pebbles.	Steep slopes or narrow rice-terraced flats.	Trails within a few hundred feet of most beaches.
(213) Island group SSW of Wan-do.	Generally obstructed, or approach channeled.	Many pocket beaches; max. 1 mi.	25 to 50 ft.	1 on 5.	Surf moderate.	Sand and pebbles; some cobbles and boulders.	Flats a few hundred feet wide rising to hills or backed directly by steep slopes.	Trails skirt most beaches; islands are interconnected across narrow straits by ferries.

K. Eastern half of Cheju-do (*Saishū-tō*, Quelpart Island).
(33°31'N, 126°31'E to 33°14'N, 126°31'E)

(PLAN 23; FIGURE IV-112; U.S.H.O. charts 5461 and 5494)

(1) Coast.

This island, lying 46 miles southward of the southwesternmost point of Korea (U.S.H.O. chart 5494), is rugged and mountainous. It is separated from the mainland by Cheju-hachyop (*Saishū-kaikyō*). Many smaller islands lie along the north side of this strait, but the water on the south side, near Cheju-do (*Saishū-tō*), is deep and is encumbered only by a few small shallow spots, most of which are marked by above-water

rocks. The approaches from the east, south, and west are deep and clear except in the immediate vicinity of the island.

The bottom gradients around Cheju-do are generally *steep*, with only a narrow strip of shallow or steeply shelving bottom. In many places, the coast is steep-to, with depths of 8 to 25 fathoms charted immediately off shore. Many detached rocks, some of which are above water but most of which are covered, lie close to the shore around the island. There are a few small islets and groups of large above-water rocks, particularly off the east and south coasts.

With the exception of part of the east coast, the shores of the island are almost entirely steep and rocky. Cliffs are located



FIGURE IV - 112. Coastal subsector 42 K.

Beach areas are shown on PLAN 23.

at many places, and reefs and offshore rocks lie off most of the coast. Beaches appear principally on the east and south coasts; many of those on the south coast are fringed with reefs.

The inland terrain is largely mountainous. There are many minor peaks, but the general slope of the terrain rises steeply to Halla-san (Hanna San), which lies near the center of the island and is 6,388 feet high. Cultivation is limited, and the terrain is composed largely of grassy slopes with some sparse coverage of coniferous and deciduous trees.

Villages are numerous, particularly along the coasts. An improved road runs westward from Kumnyong near the north-east corner of the island, through Cheju and around the west end of the island to Mosulp'o near the southwest extremity. This road is comparatively close to the coast on the north side of the island, but is farther inland from the west coast.

1

The coast is rugged; many small rocky points and several large promontories jut out from the coast (FIGURE IV - 113). Cliffs appear only immediately eastward of Cheju, but from these cliffs to the end of the subdivision, the coast is almost entirely reef-bound even in the coves. The port and city of Cheju (Chapter VI) is fronted by a beach (beach area (219), TABLE IV - 29) off which there are some scattered under-water rocks, but no continuous reef. Under-water rocks appear all along the coast. Behind the rocky coast, the hills rise steeply, broken only by steep, narrow valleys. The streams which empty into the sea along this stretch do not appear to form alluvial plains at their mouths, but cut the shore in narrow gorges.

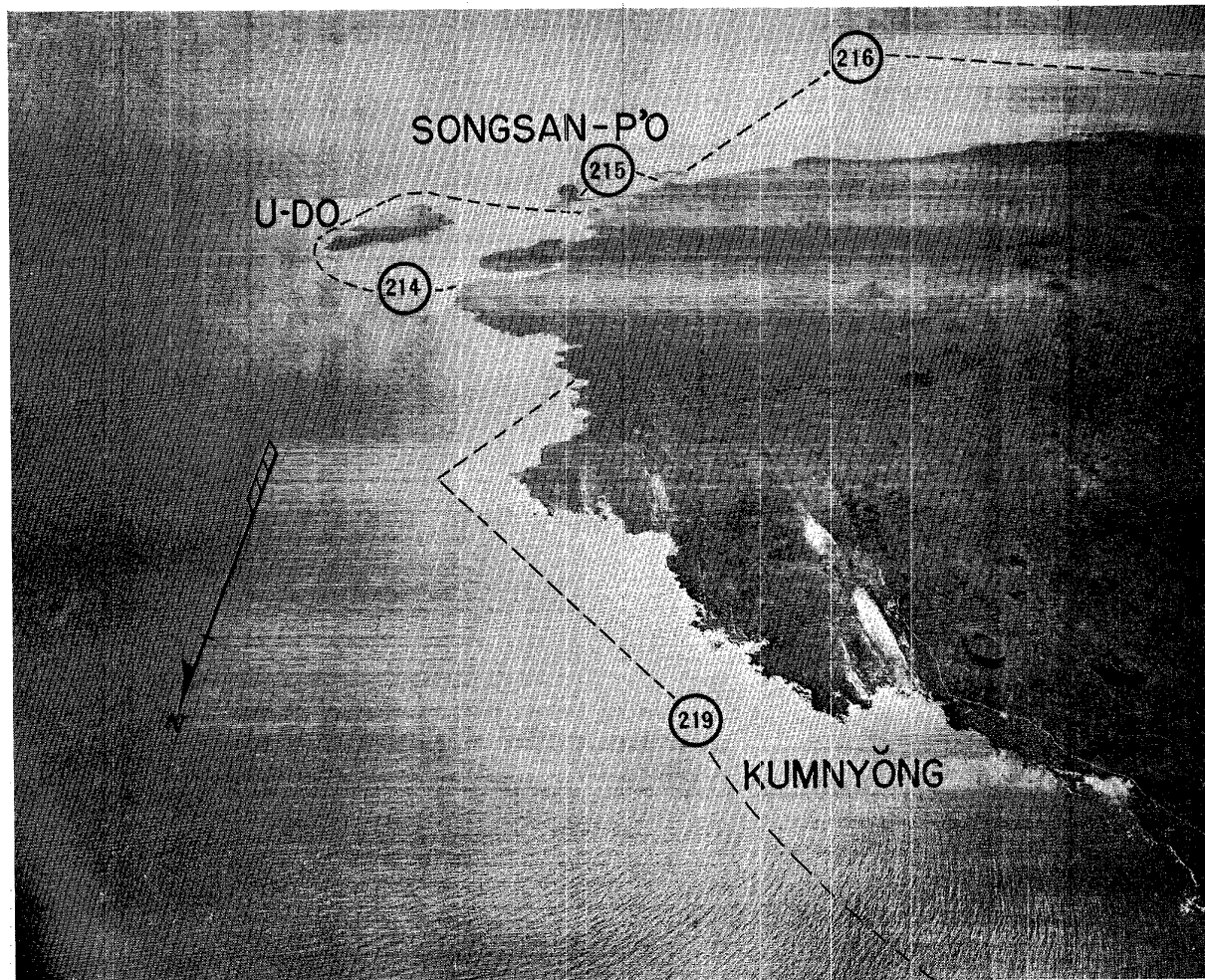


FIGURE IV - 113. Cheju-do (*Saishū-tō*, Quelpart Island). Beach areas (214) to (216), and (219). View of northeastern part of island, showing irregular rocky character of shore. Approximate position of U-do (Gyuto), 33°30'N, 127°58'E; U.S.H.O. charts 5461 and 5494. A.A.F. 468BG/4MR9, dated 6 October 1944.

There are many villages on the coast, connected by minor roads and by the main road which is in sight of the coast at many places.

2

This coastal stretch, like that of subdivision 1, is steep, mostly rocky, and largely reef-bound. There are, however, longer stretches of cliffs and of beaches. Some beaches (beach area (214), TABLE IV - 28) appear in the large bay on the east coast opposite U-do (Gyu To on U.S.H.O. chart 5461), particularly along the southern side and on the narrow isthmus which encloses Ojori-p'ŏ (Goshori Ho), the southernmost inlet off the bay. The village of Songsan-ni (Josanri) lies at the outer end of this isthmus (FIGURE IV - 114). Salt pans are also located in the inner reaches of this bay. The longest stretch of beach (beach area (215)) is at the head of Songsanp'o-hang (Josan Ho; Songsan-p'ŏ on PLAN 23). This beach extends across the head of the bay; its south end lies along a narrow sandy isthmus which also backs a smaller beach (beach area (216)) in Pangdu-p'ŏ (Boto Ho). All these beaches are partly fringed with reefs and under-water rocks. Both the headlands

which enclose Songsanp'o-hang are composed of reef-fringed masses connected to the mainland by sandy necks. The northern headland is surrounded by cliffs except for its northwest side; the southern promontory is cliff-bound on its seaward side. The remainder of the coast is steep, rocky, and reef-bound.

3

U-do (Gyu To), like the mainland opposite, is mostly rock-bound and reef-fringed. There are 5 short beaches (beach area (214)) on the island. The southernmost promontory of the island is surrounded by cliffs. Many drying and under-water rocks lie around the island, and a small reef-bound islet, Piyang-do (Hiyo To), lies off the east coast near the entrance to the largest bay. The slopes of the island are mostly grassy; although there are small villages, no cultivation is indicated.

4

Except for a few short sandy stretches (beach area (216)), the coast is rocky and reef-fringed, with many boulders along the water line, and grassy hills sloping steeply upward from the shore. Cliffs appear in several places along the western third of this subdivision. Scattered rocks lie off shore along the



FIGURE IV - 114. Cheju-do (*Saishū-tō*, Quelpart Island). Beach areas (214) and (215). View northwestward from southeastern part of Songsan-pando (*Jōsan-bantō*) on east coast of island, showing Songsan-ni (Josanri) in foreground. Dark hill at left middleground is Siksan-bong (Shoku San); conical hill at right is Chimi-bong (Shubu Ho). Bay is Ojori-p'o (Goshori Ho). Before 1926. Approximate position of Songsan-ni, $33^{\circ}28'N$, $126^{\circ}56'E$; U.S.H.O. chart 5461.

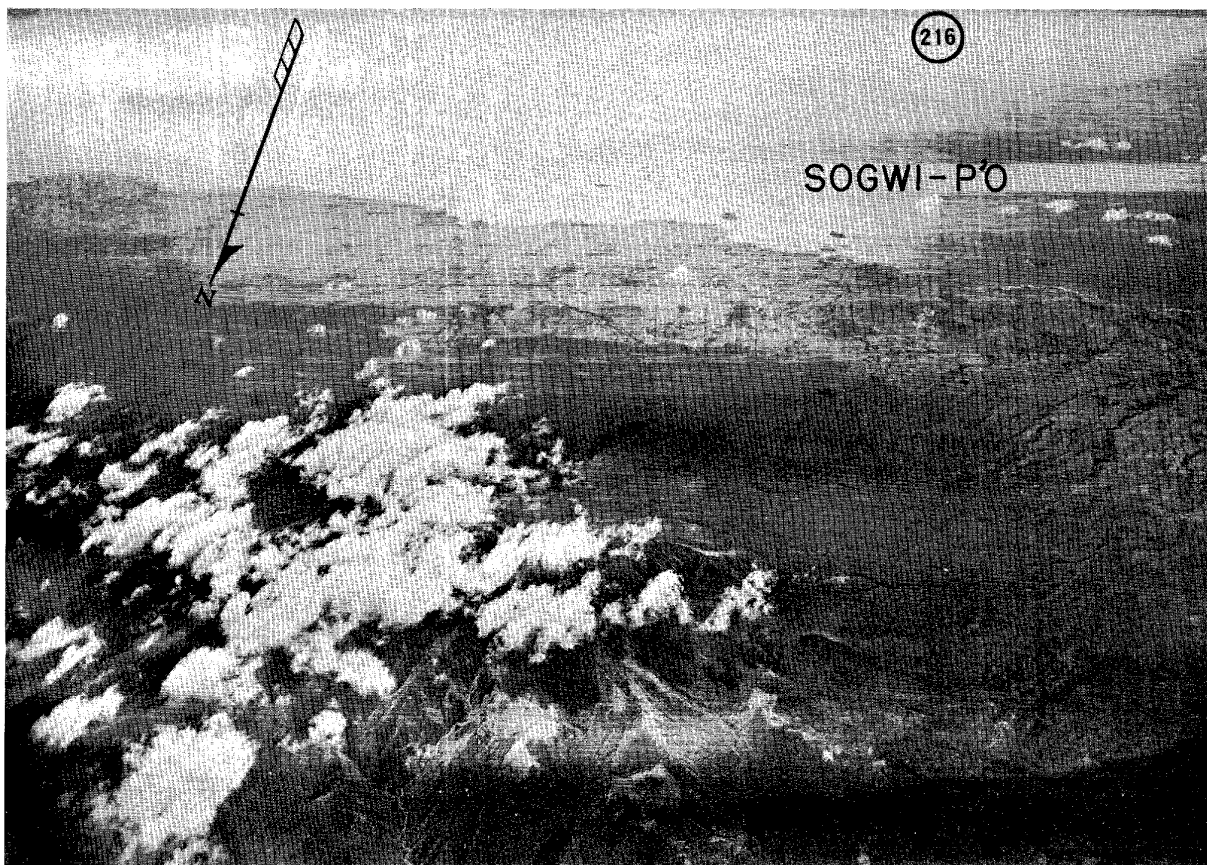


FIGURE IV - 115. Cheju-do (*Saishū-tō*, Quelpart Island). Beach area (216). Part of south coast of island, showing crest of volcano in center foreground, sloping down to jagged rocky shore. Approximate position $33^{\circ}14'N$, $126^{\circ}33'E$; U.S.H.O. chart 5494 A.A.F. 468BG/4MR9, dated 6 October 1944.

coast, and a small grass-covered islet, Cho-do, is off shore in the bight known as Sogwi-p'o (FIGURE IV - 115). Cho-do is connected to the mainland by a drying sand spit.

5

Chigwi-do is a low partly wooded islet whose rocky coasts are

surrounded by reefs. The 3 other islets in this subdivision are almost entirely cliff-bound. Sam-do is barren, and the other two are grass-covered.

(2) Landing beaches.

TABLE IV - 28

LANDING BEACHES OF COASTAL SUBSECTOR 42 K Reliability FAIR. (PLAN 23)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(214) U-do and NE coast of Cheju-do. (Figs. IV - 113 and IV - 114)	Generally obstructed.	Many short beaches; average 0.2 mi.	15 to 25 ft.	1 on 10.	Surf moderate; heavy on E side of U-do.	Sand and pebbles.	U-do is hilly island with steep but terraced slopes; mainland is low but rough and rocky.	Trails on U-do; trails back beach on mainland; road within 1 mi.
(215) Songsan-p'o. (Figs. IV - 113 and IV - 114)	South and central parts obstructed by ledges; N part clear.	2.5 mi.	50 to 100 ft.	1 on 20.	Surf moderate; lightest at N end.	Sand; some rocky portions.	Low sand hills alternate with cultivated fields; narrow coastal plain rises to interior hills.	Road close behind N half leads to Songsan-ni; connecting road extends to N coast and S coast.
(216) SE coast of Cheju-do. (Figs. IV - 113 and IV - 115)	Obstructed in many places by reefs; small boulder-strewn drying flats.	10 beaches; max. 0.7 mi.	25 to 50 ft.	1 on 10.	Surf moderate; heavy in summer.	Sand and heavy pebbles.	Low but rough terrain, in large part cultivated.	Road parallels shore within 1 mi.

L. Western part of Cheju-do (*Saishū-tō*, Quelpart Island).

(33°14'N, 126°31'E to 33°31'N, 126°31'E)

(PLAN 23; FIGURE IV - 116; U.S.H.O. chart 5494)

(1) Coast.

A general summary of the approaches, coasts, and inland terrain of Cheju-do (*Saishū-tō*) is presented under subsector 42 K. The subdivisions in subsector L are numbered as a continuation of those in K.

6

Except for one sandy stretch (beach area (216), TABLE IV - 28), rocks and cliffs largely line the coast from the eastern end of the subdivision to the mouth of a small stream near the village of Hwasun-ni. West of the stream mouth is a beach 3.8 miles long, described in detail as beach area (217) (TABLE IV - 29).

7

Kap'a-do (Kapa To on U.S.H.O. chart 5494), lying off the southwest extremity of Cheju-do (*Saishū-tō*), is comparatively low and largely grass-covered. Its coasts are rocky and surrounded by reefs. A village on the north coast is connected by a minor road to a smaller settlement on the south coast. A chain of rocky islets and rocks lies off the east and southeast sides; 2 other rocks lie to the west. Mara-do, south of Kap'a-do, is cliff-bound on its eastern side and has 2 long patches of cliffs on the west side; the rest of its coast is rocky. The islet is reef-fringed, except for the cliff-bound east coast. There is a small village on the west side.

8

The coast consists largely of rocks and cliffs, broken by only 3 small stretches of sand or sand-and-gravel beach. The first of these sand stretches (beach area (218)) lies just westward of the cliffy point at the southeastern end of the subdivision (FIGURE IV - 117). It is fronted by a narrow rocky

sand shoal, and backed by grassy dunes. The second beach, lying along the head and northwest side of a cove, is separated from the first by a blunt rocky point; this beach, extending within ¾ mile south of Mosulp'o, is fronted entirely by reefs, and backed by hills.

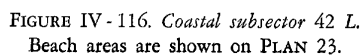
The western extremity of Cheju-do (*Saishū-tō*) is composed of 3 short blunt promontories, mostly lined with cliffs. The third sandy stretch (beach area (219)), lies just southward of the southernmost of these cliffy promontories. It is narrow and fringed by reefs.

Ch'agwi-do (Chaki To on U.S.H.O. chart 5494) is a small cliff-bound islet lying off the western extremity of Cheju-do. It is high and grassy and, except for its north side, is surrounded by off-lying rocks and smaller cliffy islets.

9

The southwesternmost 4 1/3 miles is rocky, and is fronted by off-lying rocks and reefs. At the end of this stretch, a narrow beach (beach area (219)), fronts a sandy valley which is about ¾ mile wide and nearly 1 1/2 miles long (FIGURE IV - 118). Sandy shallows front the beach; villages lie near either end, the larger being Kumnung-ni. This valley is uncultivated; there are patches of grassland near its edges, and some outcropping rocks. Piyang-do (Hiyo To), high, grassy, and rocky, lies off the beach. Northeastward of this beach, the coast is largely steep and rocky, except for 3 sandy stretches (beach area (219)). Some reefs and many offshore rocks are located along this stretch. One stretch of sand, about 2 1/2 miles from the eastern end of the subdivision, is a very narrow sand or sand-and-gravel strip running around a blunt promontory. The sandy bottom offshore is dotted with large rocks and boulders. A village lies behind the beach (FIGURE IV - 119).

The hills behind this coastal subdivision are steep; they are mostly grassy, but there are scattered growths of coniferous trees.



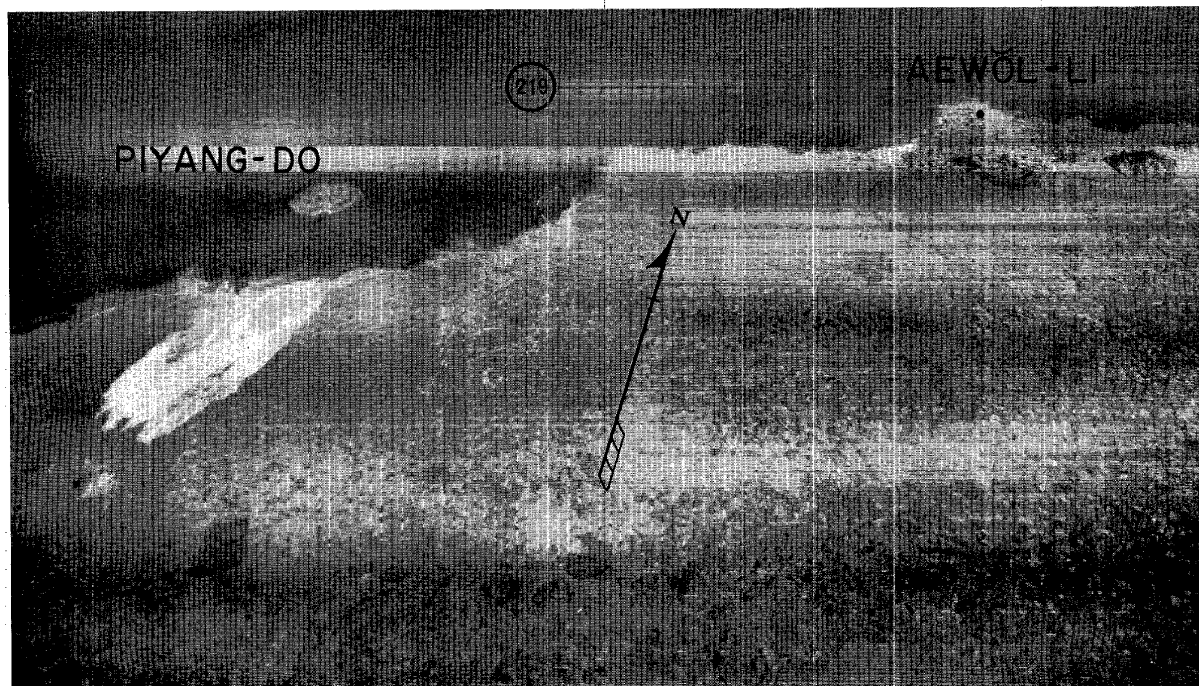


FIGURE IV - 118. Cheju-do (*Saishū-tō*, Quelpart Island). Beach area (219). Part of west coast of island, showing off-lying island of Piyang-do (Hiiyo To). Note white streak of sand blown inland from small beach opposite Piyang-do. Approximate position $33^{\circ}24'N$, $126^{\circ}14'E$; U.S.H.O. chart 5494. A.A.F. 468BG/4MR9, dated 6 October 1944.

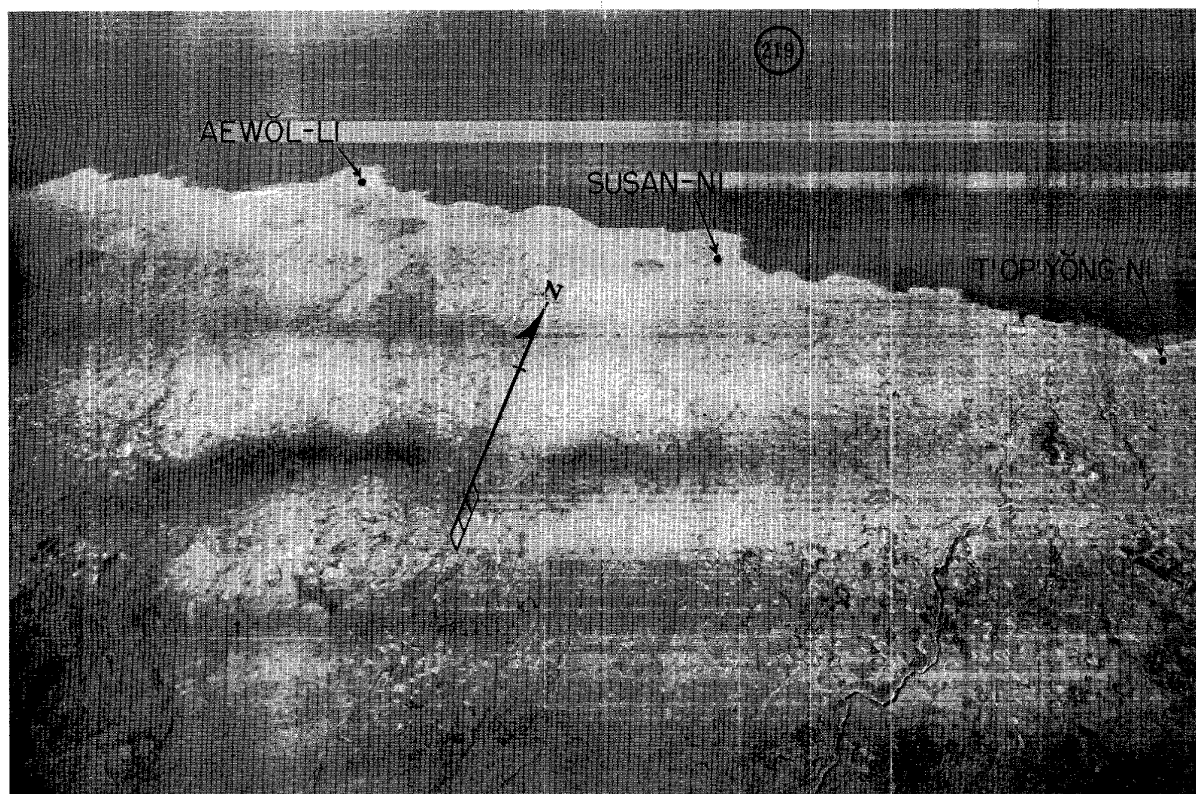


FIGURE IV - 119. Cheju-do (*Saishū-tō*, Quelpart Island). Beach area (217). Part of north coast of island, showing two segments of beach area (219): at center, northeast of Susan-ni; and at right, near T'op'yong-ni. Approximate position of Susan-ni, $33^{\circ}28'N$, $126^{\circ}23'E$; U.S.H.O. chart 5494. A.A.F. 468BG/4MR9, dated 6 October 1944.



FIGURE IV-117
JANIS 25
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FIGURE IV-117. Chet da (Munda) at Quipon Island. Beach areas 127 and 128.
View of southwestern tip of island showing point of beach area 127 and southwestern tip of beach area 128. Note rocky area forming
part of beach; also noted on low peninsula of COASTAL XIV Table XIV-3. Approximate position 33°17'N, 176°17'E. USNHC chart
5091 AAF. (RBR/IMR)G dated October 1963.

10

Haeam-so (Kaigan Sho on U.S.H.O. chart 3239) and Hwa-do (Ka To) are small islets or large rocks lying 12 and 15 miles, respectively, off the northern coast of Cheju-do

(*Saishū-tō*). They are surrounded by small shoals and a few scattered rocks.

(2) *Landing beaches.*(a) *General.*

TABLE IV - 29

LANDING BEACHES OF COASTAL SUBSECTOR 42 L
Reliability FAIR. (PLAN 23)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(217) E of Mosulp'o. (FIGURES IV - 117, IV - 120, and IV - 121) (See also (b) below.)	Obstructed by offshore islands; scattered rocks near shore.	3.8 mi., interrupted by rocky point in center.	50 to 100 ft.	1 on 20.	Surf usually moderate; heavy with SE winds of summer.	Firm sand.	W half of beach backed by cultivated slope; E half backed by steep slopes, rough terrain; high rocky butte 0.5 mi. inland commands center of beach.	Road and town back of W part of beach within 0.2 mi.; trails back E half, leading to road 1 mi. inland; good road network inland; airfield nearby (Ch. XIV).
(218) SE of Mosulp'o. (FIGURE IV - 117)	Obstructed by reefs and offshore rocks.	2 beaches; each 0.7 mi.	N beach 150 ft.; S 20 to 40 ft.	N 1 on 20; S 1 on 10.	Surf moderate.	N firm sand; S sand and pebbles.	Beaches backed by low terrace top; N beach partly obstructed by lake, S beach backed by low bluff.	Surfaced road 1,000 ft. inland over fields from N beach; S beach gives almost direct access to airfield (Ch. XIV).
(219) N and W coasts of Cheju-do. (FIGS. IV - 113, IV - 118, and IV - 119)	Scattered rocks and reefs generally near shore.	Several beaches; max. 1.2 mi.; also pocket beach on Yoso-do.	25 to 50 ft.	1 on 10.	Surf seasonal; heavy in winter, light in summer.	Sand and pebbles; probably scattered boulders.	Low but rough terrain, mostly under irrigated cultivation.	Main road parallels shore within 1 mi.; city and port of Cheju (Ch. VI) on N shore; airfield 1½ mi. west of city (Ch. XIV).

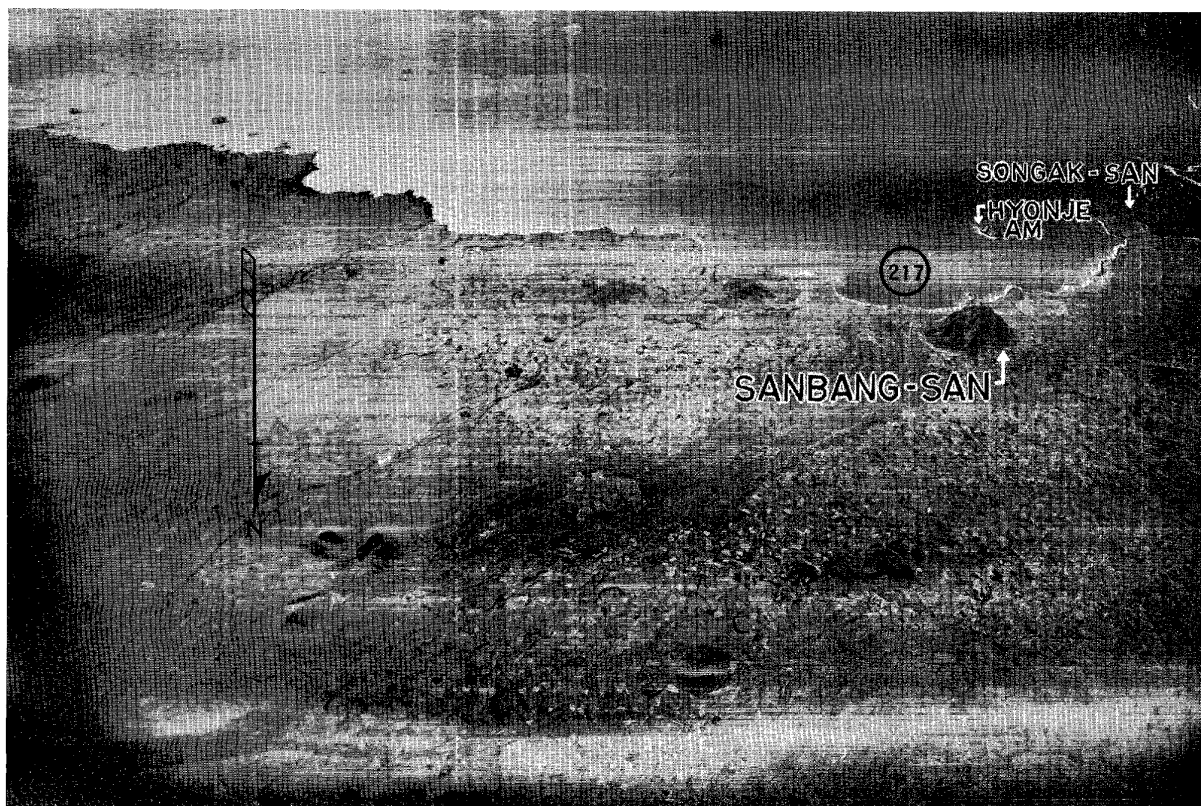


FIGURE IV - 120. Cheju-do (*Saishū-tō*, Quelpart Island). Beach area (217). Part of southwest coast of Cheju-do, showing beach area (217). Island, Hyongje-am, obstructs approach; irregular patterns of surf fronting much of beach indicate reefs. Approximate position of Sanbang-san, 33°15'N, 126°18'E; U.S.H.O. chart 5494. A.A.F. 468BG/4MR9, dated 6 October 1944.

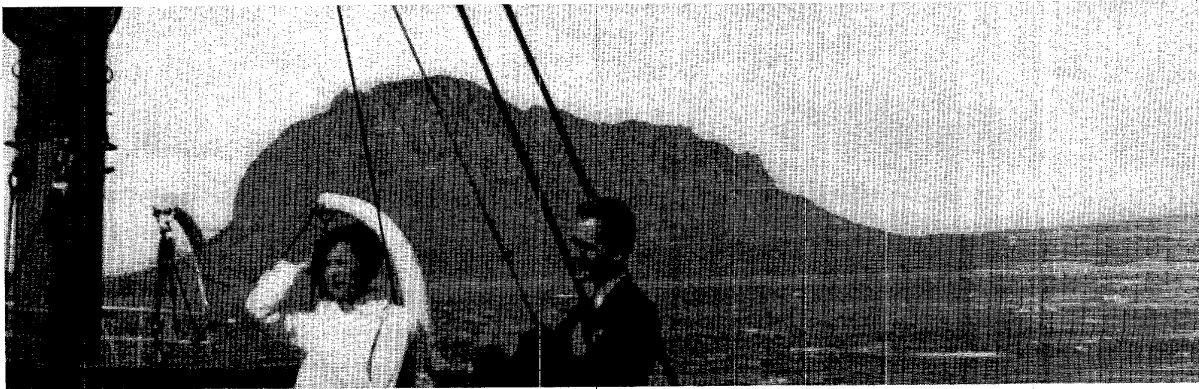


FIGURE IV - 121. Cheju-do (*Saishū-tō*, Quelpart Island). Beach area (217). View northwestward towards Sanbang-san, prominent peak which dominates center of beach area (217). October 1935. Approximate position $33^{\circ}15'N$, $126^{\circ}18'E$; U.S.H.O. chart 5494.

(b) *East of Mosulp'o, beach area (217)*. Reliability FAIR. (PLAN 23)

1. LOCATION AND EXTENT. An interrupted sand beach extends for 3.8 miles on the southwest coast of Cheju-do (*Saishū-tō*), lining a small indentation $2\frac{1}{2}$ miles east of Mosulp'o. The limits of the beach are approximately $33^{\circ}13'N$, $126^{\circ}18'E$ and $33^{\circ}14'N$, $126^{\circ}21'E$. The area is important because it is the longest stretch of beach on Cheju-do, and gives access to the airfield near Mosulp'o (Saishū Island (1), Chapter XIV, TABLE XIV - 2), and to the main road of the island. An excellent landmark is the high rough wooded hill, Sanbang-san, which stands just behind the center of the beach (FIGURES IV - 120 and IV - 121).

2. SEA APPROACH. There is little specific information on nearshore conditions. The shore is generally steep-to, but rock reefs front much of the beach, extending several hundred feet seaward to form a shelf which drops off abruptly at the outer edge. The approach is restricted by the islet Hyongje-am, which lies 1 mile east-southeast of the west end of the beach. An almost continuous ledge is reported to extend from Hyongje-am to the shore to the northwest. The beach is fairly well protected from the strong northwest winds and high waves of the winter months; during spring and summer, however, south and southeast winds are common, bringing large waves and frequent heavy rains and fog, making the sea fronting the beach particularly dangerous. The spring tide rises approximately 8 feet, the neaps 6 feet; the neap range is 3 feet. Tidal currents are weak; speeds of 0.5 to 1 m.p.h. are reported. There are no anchorages capable of sheltering large vessels; 10 miles from the beach are depths as much as 70 fathoms over a generally rocky bottom.

3. CHARACTER OF BEACH. There is conflicting evidence on the width and continuity of the beach. Generally reliable maps show almost continuous strips of sand on both sides of the rocky interruption in the middle of the beach, but the oblique photograph (FIGURE IV - 120) indicates that the shore to the west of the rocky point has little or no beach. It is probable that both sources are correct; the beach is composed of a thin layer of sand resting on a rocky shelf, and after severe storms, or after exposure to continuous heavy surf, it is likely that the sand is stripped from the platform, leaving bare rock; in periods of calm weather, the sand probably moves back

on the shore, forming a wide, continuous, almost flat strip. Surf breaks in an irregular fringe within a few hundred feet of shore; the boundary of the surf belt is determined by the irregular outline of the rocky shelf on which the beach rests. There are no structures reported on the beach. Water supply is a difficult problem; it is probable that the stream at the east end of the beach area (PLAN 23) flows only immediately after rains, and that the village of Mosulp'o is supplied by springs.

4. ADJACENT TERRAIN AND EXITS. The west part of the beach is backed by a slope of approximately 1 on 10, which flattens within a few hundred feet of the beach to the gentle slope of a broad saddle connecting across to Mosulp'o. The crest of the saddle has an elevation of approximately 110 feet. An airfield (Chapter XIV) has been constructed on this saddle, just southeast of Mosulp'o (FIGURE IV - 117). The mile of land between the beach and the airfield is covered with cultivated fields, many of which may be walled by stone fences. The east half of the beach is backed by steep slopes, ranging from 1 on 5 to vertical, and the terrain is rough, with hills rising to 200 feet. Both parts of the beach are dominated by the hill Sanbang-san, which rises with almost vertical sides to an elevation of 1,300 feet. A narrow road runs within a mile of the center of the east half of the beach.

43. *Haenam-gak (Kainan-kaku) to Changsan-got (Chansan Kotsu)*

($34^{\circ}17'N$, $126^{\circ}31'E$; $38^{\circ}08'N$, $124^{\circ}39'E$)
(PLANS 22 to 32; FIGURE IV - 176)

This sector extends northward for 250 miles from the southwesternmost point of the Korea mainland, then west-northwestward 100 miles to the tip of the mountainous Changsan Peninsula. The coast is irregular both in contour and in off-shore gradient. The approaches are encumbered by broad shoals, detached banks, and numerous archipelagos. Channels leading through the islands and shoals are narrow, difficult, and in many places shallow. The coasts, both of the mainland and of the numerous islands, are generally fronted by broad mud flats which fill most of the inlets and in places extend 2 or 3 miles

off shore. Stretches of sand flats along the outer edge of the tidal mud flats are common.

The shores of this sector are generally steep. Cultivation along the coast consists almost entirely of irrigated rice fields and these are confined to narrow coastal strips and small valleys. These fields are generally protected by dikes, and in some places sections of the tidal mud flats have been reclaimed for cultivation. Salt pans are common along the shores of the inlets.

The terrain back of the coast is generally hilly. Low hills predominate but more precipitous slopes rising to elevations of 500 to 800 feet are not uncommon. Peaks of 1,000 feet or more are occasionally found. The lower slopes of these hills are grassy, with frequent patches of scrub pine. The higher hills usually have a cover of coniferous trees with scattered deciduous growths.

Beaches are numerous, both on the islands and the mainland, but none can be recommended as especially suited for landing operations, because of the high tides, ranging from 12 to 30 feet, and the attendant high current velocities in the channels of the indented coast; the almost continuous wide mud and sand flats which front the beaches; and the hilly or mountainous terrain which backs the beaches, with the characteristic poor communications of such areas. There is difficulty in the interpretation of the basic data for this coastal section; beaches in areas of high tides are narrow above the high water mark,

and the mapping of the beaches on the source maps varies markedly from map to map according to the methods of individual mappers. Consequently there is a considerable amount of interpretation in the location and characteristics of the beaches shown on the PLANS, but the interpretation was made in accordance with sound engineering and geological principles. There are two chief types of beaches; narrow, steep sand and pebble beaches which lie at the foot of steep slopes, and which in some places are continuous for several miles; and short, somewhat wider, bayhead beaches, which front the mouths of narrow, steep valleys which dissect the hills. A single description gives the characteristics of almost all the beaches of this sector: approach channeled; fronted by wide sand or mud flats, 15 to 50 feet wide; slope 1 on 10 to 1 on 20; surf moderate or light; composed of sand and pebbles; backed by small flats in rice enclosed in hills, or directly by steep hill slopes; main communication lines accessible only by trails over hills.

On this coast are a number of important ports, including Mokp'o, Kunsan, and Inch'on (Chapter VI). Each of these ports is reached through winding channels, and is separated by hills from any possible nearby beaches. A railroad line runs north from Mokp'o, roughly paralleling the coast in all but the northwest part of the sector, but nowhere is it readily available to the beaches. Two beaches in this sector are described in detail; these are, beach area (243) in subsector 43 H, and beach area (288) in subsector 43 Z. (FIGURE IV - 176)

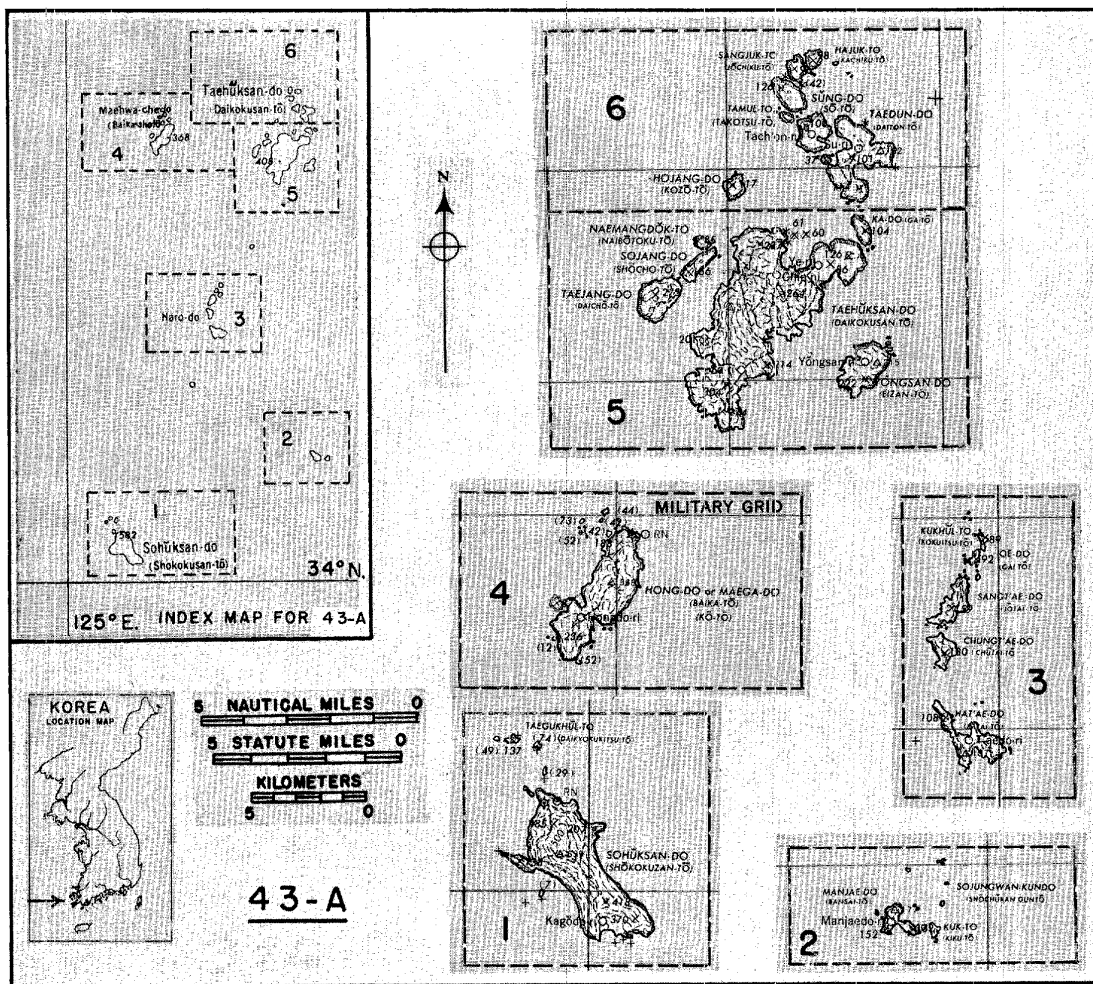


FIGURE IV - 122. Coastal subsector 43 A.
Beach areas are shown on PLAN 24.

A. Huksan-chedo (*Kokusen-shotō*).

($34^{\circ}30'N$, $125^{\circ}15'E$)

(PLAN 24; FIGURE IV - 122; U.S.H.O. chart 3239)

(1) Coast.

The islands of this group, lying across Maemul-sudo (*Maikotsu-suidō*, Maibutsu Suido) from the southwestern point of Korea, are all quite similar in formation. They are high, mostly steep, and fringed with islets and rocks. The coasts consist largely of cliffs or hills sloping steeply to the sea. Landing places are few and small. There is deep water between the scattered islands. Tide rips occur around the west, south, and east sides of subdivision 5 and at the north end and southwest side of subdivision 3.

1*

The upper part of Sohuksan-do (Kakyo To) is largely wooded. There are breaks in the coastal cliffs near the south extremity and on the east side of the north point.

2

The isthmus joining the two parts of Manjae-do (Mansai To) is low and sandy (beach area (220), TABLE IV - 30).

The bay on its north side is suitable for small craft sheltering from south and west winds.

3

These islands are rocky and unwooded. There is an excellent harbor for small craft on the northern side of Hat'ae-do (Hate To) (beach area (221)).

4

Hong-do (Koi To) is high and wooded. Its coasts are mostly sheer cliffs except along the isthmus connecting the two larger sections of the island.

5

The southern half of Taehuksan-do (Daikoku-san To) is high and wooded. The northern part is gently sloping and partly under cultivation. The coast of the island has many indentations, and there are partly sheltered anchorages on the east, west, and north sides. All 6 islands have extensive cliffs along their coasts. There is a beach at the head of the deep bay on the north side of Taehuksan-do (beach area (222)).

* Centered boldface numbers refer to coastal subdivisions numbered on strip maps, as on FIGURE IV - 122.

(2) *Landing beaches.*

TABLE IV - 30
LANDING BEACHES OF COASTAL SUBSECTOR 43 A
Reliability FAIR. (PLAN 24)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(220) Manjae-do.	Partly obstructed.	Beaches on either side of narrow neck; 0.2 mi. each.	25 to 50 ft.	1 on 10.	Surf seasonal; heavy on N in winter, heavy on S in summer.	Probably sand and pebbles.	Low neck joining high hills.	None reported.
(221) Har'ae-do.	Partly obstructed.	0.1 mi.	25 to 50 ft.	1 on 10.	Surf moderate; good protection from all winds but N.	Sand and pebbles.	Steep hill slopes of rugged island.	Trail 1,000 ft. inland.
(222) Taehuksan-do and neighboring islands.	Generally obstructed or approach channeled.	Many beaches; max. 0.4 mi.	15 to 25 ft.	1 on 5.	Surf generally moderate.	Sand and pebbles.	Steep slopes or narrow steep valleys of rugged islands.	Trails skirt all beaches.

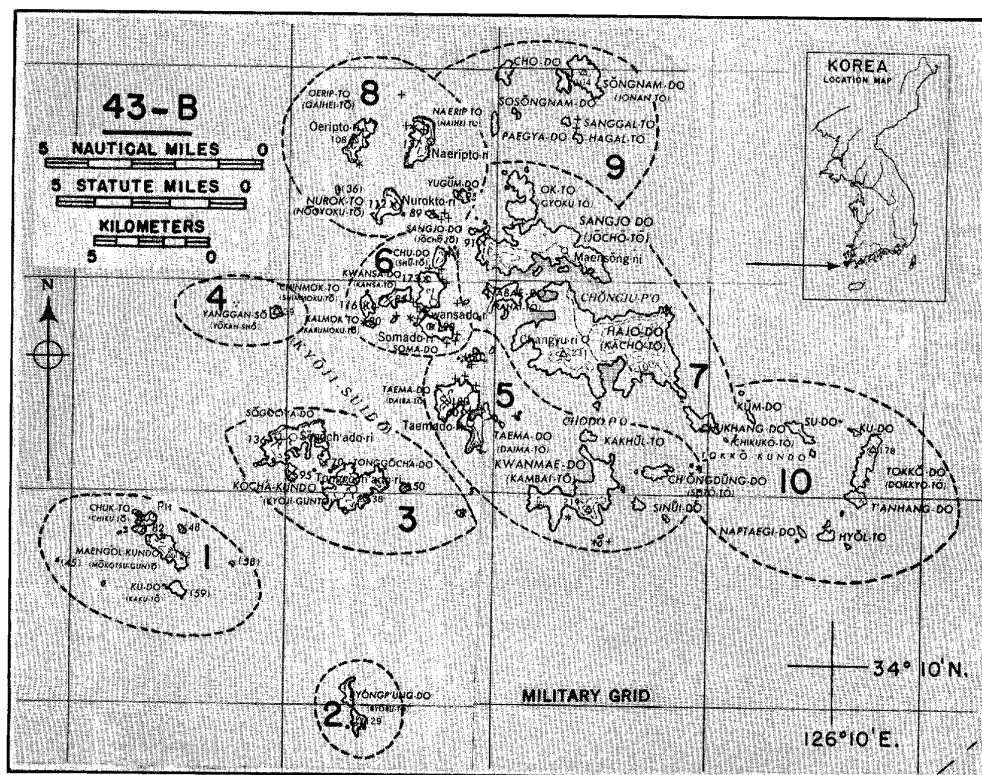


FIGURE IV - 123. *Coastal subsector 43 B.*
Beach areas are shown on PLANS 22 and 24.

The islands are generally high and their coasts steep. Only a few have any considerable sand stretches. The hills are generally grassy, but there are occasional growths of scrub pine and other trees on the steeper slopes.

1

Maenggol-kundo (Myangoru Gunto) (U.S.H.O. chart 5455) is composed of 3 islands and several off-lying islets and rocks. The islands are treeless and grassy and have a maximum altitude of about 450 feet. Chuk-to (Chu To) and Maenggol-do (Myangoru To), the 2 northern islands, are connected by a sandy shoal under about $1\frac{1}{4}$ fathoms. There are cliffs at the northeastern extremity of Maenggol-do and along the west side of Chuk-to. All 3 islands are inhabited.

2

Pyongp'ung-do (Hempun To), which is shown on some maps as 2 islands and on others as 1, is long and narrow and is composed of 2 hills about 450 feet high connected by a low, sandy isthmus which may be awash at times. The coasts other than the isthmus are composed mostly of cliffs.

3

Koch'a-kundo (Gocha Gunto) is composed of 2 main islands and several off-lying islands and rocks. The coasts of both the larger islands are much indented. Cliffs border the north coast of Sogoch'a-do, the northern island, and most of the south side of Tonggoch'a-do (Togocha To). The water along the south side of Sogoch'a-do and in its indentations is shallow (beach area (223), TABLE IV-31). A shoal connects Sogoch'a-do with the largest of the off-lying islands between it and Tonggoch'a-do. Two other islets lying between the 2 main islands are connected by a shoal and depths of $1\frac{1}{2}$ fathoms. There are villages on both the larger islands. Koma-do (South Island) is a small grassy island lying about 2 miles east by south of Tonggoch'a-do.

4

Yanggan-so is a conspicuous grass-covered conical island. There is a group of rocks, Soyanggan-so (Soyangan To), rising to a height of 36 feet about $\frac{3}{4}$ mile west-northwest of Yanggan-so.

5

Kwanmae-do (Porima To) is largely surrounded by shoals which are narrow on the west, south, and east sides, but widen to over a mile on the north side of the island. The island is generally high, having numerous summits from 400 to 700 feet. The slopes of these hills fall steeply to the sea, except for the west side of the north part where there is a beach, apparently backed by low ground (beach area (223)). Two villages are located in this part of the island. Ch'ongdung-do (Chontsun To), an islet which rises steeply to a height of 424 feet, lies off the eastern coast of Kwanmae-do. A shoal extends from its western end to within less than $\frac{1}{2}$ mile of the shoal on the east side of Kwanmae-do.

Taema-do (Teimaa To) lies northwestward of Kwanmae-do. It is very irregular in shape, having 3 large shallow bays somewhat obstructed by mud flats (beach area (223)). Shallow water surrounds the island except on the western side. Cliffs appear along the southern half of the western side and elsewhere hills rise steeply from the sea. Mo-do (Mo To), an islet lying north of the northeastern extremity of Taema-do, is surrounded by shallow water, and has several rocks close off shore.

6

Soma-do (Shoba To), Kwansa-do (Kanchon To), Chu-do (Cho To), and Chinmok-to (*Shimmoku-to*) lie on a connecting bank. Kalmok-to (Torumoku To) and Kal-do (Seki To) lie on another bank just westward. These islands all have precipitous slopes with some sheer cliffs, particularly along the north side of Kwansa-do. There are several islets and many rocks off shore, both on and around these two banks. There is a village on Soma-do and there are 2 on Kwansa-do.

7

Sangjo-do (Sancho To) is composed largely of hills sloping steeply to the sea. Its coast is much indented and, except on the northeast side, it is surrounded by shallow water and its inlets are largely blocked by mud flats. There are several native villages on the island. Ok-to (Oku To) lies just northward of Sangjo-do and is connected with it by a shoal under 2 fathoms. The island consists of 2 high masses, connected by a low isthmus. A shoal extends a mile westward of the island, but the eastern side is steep-to. A village is charted at the south end of the isthmus.

Hajo-do (Hacho To) lies southward of Sangjo-do and is separated from it by a narrow channel suitable only for small vessels. This island also has many indentations, most of which are encumbered by mud flats. Shallow water extends some distance off most of these flats. The coasts of the island are generally steep. There are a dozen or more villages.

Nabae-do (Rahai To) is the larger of 2 islets lying on a bank westward of the northwest extremity of Hajo-do. Chukhang-do (Chukuhan To) lies off the southeast extremity of Hajo-do and is connected to it by a shoal under $1\frac{1}{2}$ fathoms. These islands are inhabited.

8

These scattered islands, islets and rocks are generally steep and the coasts of the 3 larger islands are for the most part bounded by cliffs. Nurok-to (Totsugyoku To) is partly wooded. Oepyeong-to (Oerip-to, Bakekarimen To) is steep-to on its western side, but has shallow water along most of its eastern side. At the north end of Naepyeong-to (Naerip-to, Ankarimen To) there is a bay enclosed by a long, narrow arm of land extending northwestward. The bay is shallow and there are rocks charted in it. There is a native village at the head of the bay.

9

The approaches to these islets are largely encumbered by drying and under water rocks and the islets are bounded by narrow, rocky shoals. Villages are charted on Songnam-do (Taasonnamu To) and on the small island immediately west of it Sosongnam-do (Chakunsonnamuto To).

10

Tokko-kundo (Tokko Gunto) is a scattered group of small islands and islets. Chukhang-do (Chukuhan To) has been mentioned under subdivision 7. Tokko-do (Tokko To), the largest island of the group, and Su-do (Pia To) are the only islands on which villages are charted, though some of the smaller islands are probably inhabited. Ku-do (Karima To) and T'anhang-do, off the northwest and south extremities of Tokko-do, respectively, are each connected with it by a narrow shoal.

(2) *Landing beaches.*

TABLE IV - 31

LANDING BEACHES OF COASTAL SUBSECTOR 43 B
Reliability FAIR. (PLANS 22 and 24)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(223) Islands W of Changjuk-sudo (Chochiku- suido). (PLANS 22 and 24)	Approaches generally channeled; obstructed.	Several pocket beaches; max. 0.5 mi.	25 to 50 ft.	1 on 10.	Surf generally moderate.	Sand and pebbles.	Steep slopes of rugged islands.	Trails connect parts of islands.

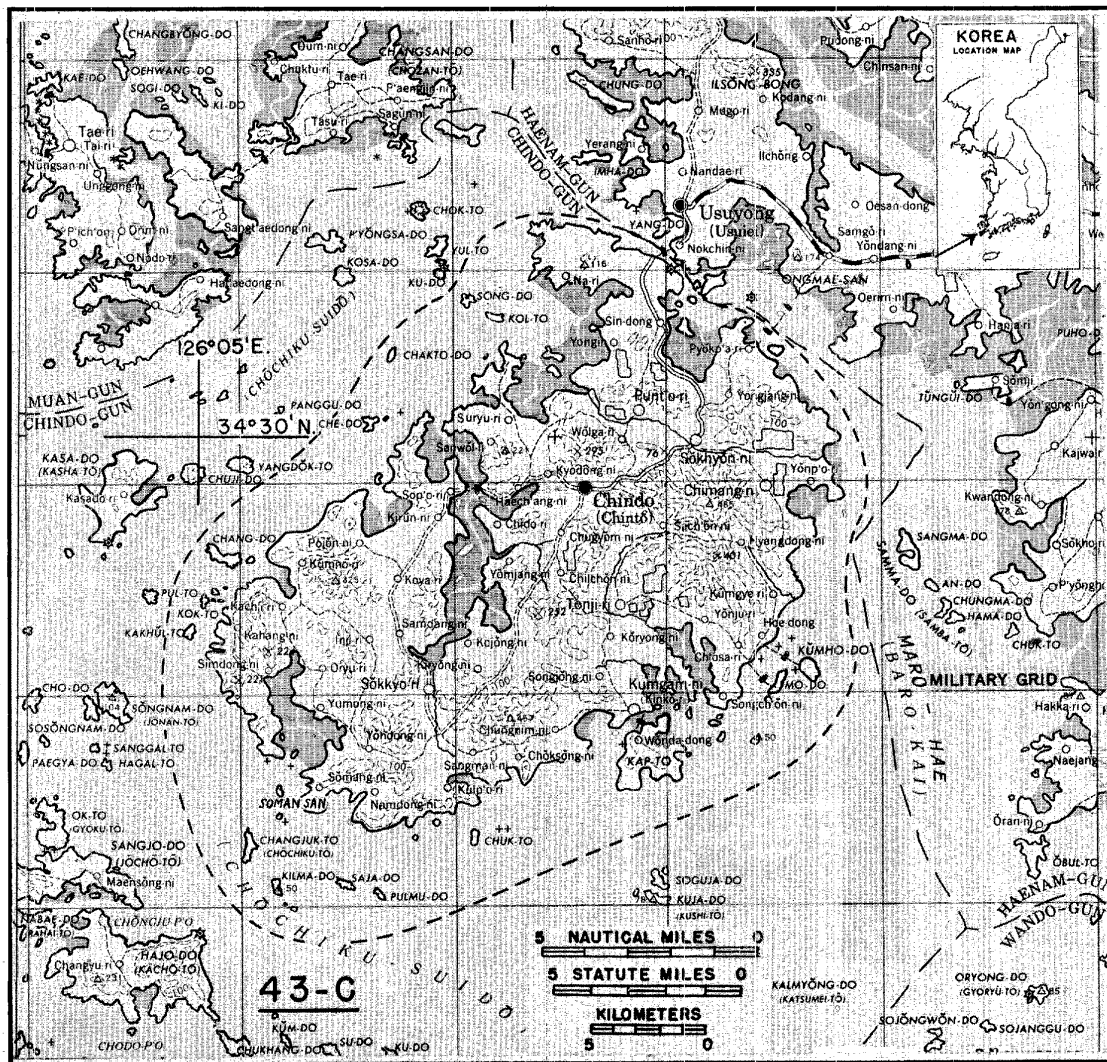


FIGURE IV - 124. Coastal subsector 43 C.
Beach areas are shown on PLAN 22.

C. Chin-do.

(34°28'N, 126°15'E)

(PLAN 22; FIGURE IV - 124; U.S.H.O. charts 3239 and 5455)

(1) Coast.

Chin-do (Chin To) is one of the largest islands off the west coast of Korea. A narrow channel, Myongyando (Meigunya-guto, Washington Strait, 400 yards), separates it from the mainland, to which it is connected by 2 ferry lines. The approaches to Chin-do are deep, but are encumbered by the many islands lying farther off shore to the north, west, and south.

The island is hilly and a large part of its coast is precipitous. There are many deep and irregular indentations in the coast, and at some places on these inlets the slope is more gentle. All of the larger inlets and many of the smaller ones are choked with mud flats on which numerous salt pans have been constructed.

The island is well-populated and there are many villages scattered in all parts of it. The largest town, Chindo, is located in the central part of the island, close eastward of the longest indentation in the north coast. The town is separated from this inlet by marsh. There is a system of roads and tracks on the island, and there is reported to be an airfield or a seaplane station (Chapter XIV). Rice is cultivated and paddy fields may be found in various parts of the island.

Along the northeast, east, and southeast coasts, the steep coast line is broken in places by small cultivated valleys and a few stretches of sand. The valleys and most of the sand stretches are found at the heads of inlets and coves, but there is one considerable sandspit, fronting a valley, on an open bight near the southeast corner of the island (beach area (224), TABLE IV - 32).

The southwest coast of the island is very steep. The large inlet in this stretch is mud-filled and many salt pans front its

steep shores. Three small cultivated valleys around the inlet are partly fronted by dikes.

The northwest coast is indented with several inlets, one of which extends more than halfway across the island. The coasts are steep on this side of the island and in the inlets except for a few narrow valleys, some of which are dike-protected. There are a few short beaches (beach area (225)).

Several islands and islets lie off the coast of Chin-do. The largest of the islets off the northwest coast are Cho-do (Cho To; Che-do on PLAN 22) and Chang-do (Chagu To). Chang-juk-to (Chanjiku To), Kilma-do (An To), Saja-do (Sasha To), and Chuk-to (Chiku To) are scattered off the southwest

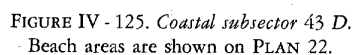
end of the island, separated from it by deep water. Three larger islands and some islets off the southeast coast are connected with Chin-do by a wide shoal. Of these, the largest, Kap-to (Chopu To), is also connected to Chin-do by a broad mud flat. There is a village charted on the side nearest Chin-do, across the mud flat from the larger village on that island. A beach is charted at the head of a shallow bay on the seaward side of Kap-to (beach area (224)). Kumho-do (Chimu To) and Mo-do, eastward of Kap-to, are inhabited. All 3 of these islands are connected with Chin-do by ferry lines.

(2) *Landing beaches.*

TABLE IV - 32

LANDING BEACHES OF COASTAL SUBSECTOR 43 C
Reliability FAIR (PLAN 22)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(224) SE shore of Chin-do.	All beaches fronted by extensive shoals; some by mud flats.	14 short beaches; aver- age 0.5 mi., max. 1 mi.	50 to 75 ft.	1 on 20.	Surf moderate.	Sand.	Small flats, generally in rice, backed by steep hill slopes.	Trails connect beaches to town of Chindo in center of island.
(225) NW shore of Chin-do.	Fronted by wide shoals except for center beach.	5 beaches; average 0.2 mi.	10 to 25 ft.	1 on 10.	Surf moderate.	Sand and pebbles.	Narrow flats backed by steep hill slopes.	Trails and narrow roads lead by long detour to Chindo in center of island.



D. Haenam-gak (*Kainan-kaku*) to Mokp'o (Moppo).

(34°17'N, 126°31'E; 34°47'N, 126°22'E)

(PLAN 22; FIGURE IV - 125; U.S.H.O. charts 5455, 3238, 3239)

(1) Coast.

The coast from Haenam-gak (*Kainan-kaku*) northward to Mokp'o is composed of a series of deep inlets and bays and long irregular promontories. The southern part of this coast forms the eastern shore of Maro-hae (*Baro-kai*, Washington Gulf). The northern part forms the eastern shore of Myongyando (Meigunyaguto, Washington Strait) and Sia-hae (Jiiaa Pata). The bays and inlets along the coast are generally shallow and are largely filled with mud flats. There are many islands and islets lying all along the shore, and 3 groups of islands and several smaller islands are scattered about Maro-hae. The waters of Maro-hae northward of Haenam-gak are generally shallow, depths of 10 fathoms rarely being found. Toward the north end of the gulf the shallow flats which border the coast extend farther into the gulf. Myongyando is a narrow passage with a minimum width of about 400 yards.

1

The main groups of islands in Maro-hae (*Baro-kai*, Washington Gulf) are Samma-do (Gobaro Retto) near the middle of the gulf, Chang-gundo (Cho Gunto), southwestward of Haenam-gak (*Kainan-kaku*), Oemo-gundo (Yemodori Gunto), southward of Chang-gundo, and a few smaller islands scattered to the westward. Samma-do is composed of 5 wooded and cliff-bound islands lying on a shoal which extends southward and westward from the mainland. The channel lies to westward of these islands and is so narrowed by their connecting shoal as to appreciably increase the tidal stream velocity northward of them. Chang-gundo is composed of 5 small, steep islands and several small islets and rocks. There are many shoals in the vicinity of this group. Oemo-gundo is composed of 3 small islands and numerous offshore rocks. These islands are largely bounded by cliffs and surrounded by small off-lying rocks. The largest of the other scattered islands are Kuja-do and Soguja-do, lying near the southwest entrance of the gulf and connected by a shoal, and Kalmyong-do (Karumei To) and Milmae-do (Mirumei To).

2

The shores of Maro-hae (*Baro-kai*) are composed of alternating stretches of sandy beach (beach area (226), TABLE IV - 33) and out-jutting hills falling steeply to the shore line. The whole bay is shallow with its greatest depth of 2½ fathoms near the entrance; depths of ½ to 1 fathom prevail. The shore of the bay is fronted by mud flats over almost its entire length. Kelp appears in the shallow water off some of the mud flats. The enclosing promontories and the immediate hinterland along most of the southern half of the bay are hilly. Behind the northern part there are more gentle slopes and a small valley. Yang-do (Yo To), just westward of Haenam-gak (*Kainan-kaku*), lies on a detached shoal. Two other islands, Obul-To and a smaller islet, lie near the edge of the bay shallows.

3

The 4 bays in this subdivision are almost completely filled with mud flats. The promontories are mostly high and steep

and are largely wooded with scrub pine and other conifers. There are rice fields near the heads of the bays and on some of the more gentle slopes. Mud flats in the northernmost bay extend all the way to the entrance. In the southern bays the mud flats are fronted by shallow water extending outward to a line joining the extremities of the promontories. There are several bayhead beaches (beach area (226)). Several small islets lying along this coast are connected to the coast by mud flats. Chuk-to, near the northwestern extremity of the largest bay, lies at the edge of the shoal.

4

The large bay that occupies the southern half of this subdivision is almost entirely filled with mud flats. There are some narrow channels through the flats in which depths of 3 to 4½ fathoms are charted. The flats are fronted however, by a wide shoal extending halfway across Maro-hae on which the controlling depth is ¼ fathom. Except for the enclosing promontories, on which hills reach a maximum height of about 550 feet, the shores of the bay are comparatively low, the flats being backed generally by gentle slopes or small alluvial plains; some hill spurs reach the water's edge. There is considerable rice cultivation and some patches of grassland are present. The uncultivated land is mostly wooded with scrub pine and other conifers. There are salt pans at several places along the edge of the mud flats including a large area of salt pans located on one of the islands in the bay. There are 2 short beaches (beach area (227)). Many villages are scattered along the shores of the bay and there is a network of minor roads and tracks. Tungui-do, which lies near the middle of the entrance of the bay, is connected to the land to the southward by ferry.

Two smaller bays, farther to the north, are similar in topography, cultivation, and habitation to the first. They are filled with mud flats, but the flats are separated from the Maro-hae channel only by a narrow fringe of shoal and some small detached off-lying banks. Some reclamation of mud flats for rice cultivation is indicated in both bays but is more extensive in the southern. A promontory which forms the west side of the northern bay forms the east side of the narrowest part of Myongyando (Meigunyaguto, Washington Strait). The ferry across Myongyando has its landing on the western side of this promontory.

5

The west coast of Hwawon-pando (Haon peninsula), which is the eastern shore of Sia-hae (Jiiaa Pata), is hilly and largely wooded. There are alternating stretches of sand and rock along the shore, with some cliffs toward the northern end (beach area (228)). There is considerable rice cultivation along the shores of the inlets. Several villages are shown connected by minor roads. The port town of Usuyong (Chapter VI) is located at the base of the promontory at the south end of this subdivision and is connected with the Chin-do ferry by a road running very near the coast. The inlets on this coast are all filled with mud flats on and near which there are several scattered islands.

6

The 2 deep inlets enclosed by Hwawon (Haon), Haenam (Haianmu), and Yongam (Yongan) peninsulas, though bordered on all sides by mud flats, have long narrow channels of deeper water extending some distance toward their heads. The

channel in the southern inlet has a charted depth of 3 fathoms for a distance of 5 miles and of 1½ fathoms for a distance of 8 miles inland from the tip of Haenam-pando (peninsula). In the northern inlet the channel has depths of 6 fathoms for about 4½ miles and of about 1 fathom for another mile from this point. The outer ends of both Hwawon and Yongam peninsulas are high and largely covered with scrub pines. Further headward the shores of both bays are somewhat lower, though occasional bluffs interrupt the muddy banks. A few stretches of sand are found above the mud flats (beach area (234)). There are roads and villages along the shores on all 3 of the peninsulas and there is some cultivation of rice. A small island about 2 miles inside the inlet from the extremity of Hwawon-pando is connected to the shore by a causeway, and by a ferry across 2 inlets to the port city of Mokp'o, situated on a fourth peninsula further northward (Chapters VI and VIII). The entrance to the southern of the 2 inlets is largely blocked by Kumho-do which is connected to both Hwawon and Haenam peninsulas by ferry. The channel runs to the west and southwest of this island. Several small islands lie off the end of Yongam-pando (peninsula). Talli-do, which is high and steep on the west side and fringed with flats on the inland side, lies off the north end of Hwawon-pando in the entrance to the inlets. There are several smaller islands in the same vicinity.

7

The inlet included in this subdivision is the estuary of the Yongsan-gang and several smaller streams. It is largely encumbered by mud flats but a marked channel with a controlling depth of 3 fathoms extends about 12 to 13 miles inland. Depths up to 8 fathoms are found in places as far as 8 miles up the channel. The shores of this inlet are very irregular and much indented, but the side indentations are all filled with flats. There are a few short beaches (beach area (234)). The land around the inlet is generally hilly, and the hills are largely wooded. Particularly in the inner reaches, however, there are low areas and reclaimed flats on which rice is cultivated. The city and port of Mokp'o (Chapters VI and VIII) lies just inside the inlet on the south side of Muan-pando (Buan Peninsula) near its extremity. There is rather steep hills both north and west of Mokp'o. The city is connected by ferry to both Yongam and Hwawon peninsulas. Mokp'o is also the terminus of a main road and the Honan main-line railroad. Many villages are situated around the inlet and are connected by a network of minor roads and tracks. Serving these roads are several ferries crossing the minor indentations and the major inlet.

(2) *Landing beaches.*

TABLE IV - 33
LANDING BEACHES OF COASTAL SUBSECTOR 43 D
Reliability FAIR. (PLAN 22)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(226) Mainland on E side of Maro-hae (Baro-kai).	Approach partly obstructed by islands; beaches fronted by extensive shoals; some by mud flats.	Many short beaches; max. 1.4 mi.	25 to 50 ft.	1 on 15.	Surf moderate.	Sand, generally firm.	Hills or narrow flats in rice.	Trails back most beaches, leading to narrow road connecting to Haenam 10 to 20 mi. inland.
(227) Shore W of Haenam.	Approach channeled; beaches fronted by wide mud flats.	Several short beaches; max. 1.5 mi.	15 to 25 ft.	1 on 15.	Surf light.	Sand.	Narrow flats in rice backed everywhere by hills.	Trails; trail from N beach connects 2 mi. inland to road from Usuyong to Haenam.
(228) NW shore of peninsula extending N from Usuyong.	Generally clear; approach channeled.	3 beaches: 2 less than 1 mi., 1 1.4 mi.	15 to 25 ft.	1 on 10.	Surf light, moderate with NW winds.	Firm sand.	Beaches on S backed by narrow valleys; beach on N by steep hill slopes.	Trails skirt shore, connect over hills to Usuyong 10 mi. S.
(234) Beaches in deeply indented shore S, SE, and E of Mokp'o.	Approach channeled; beaches fronted by wide drying mud flats.	Many beaches; max. 2.2 mi., average 0.5 mi.	15 to 25 ft.	1 on 10.	Surf light or absent.	Sand and pebbles.	Beaches fringe shore of hilly peninsulas.	Rough hills crossed only by trails isolate beaches from roads connecting Usuyong, Haenam, and Yongam; R.R. from Mokp'o can be reached from N beaches by ferry.

E. Islands between 34°25'N and 34°56'N, and between 125°47'E and 126°14'E.

(PLANS 22 and 24; FIGURE IV - 126; U.S.H.O. charts 5454, 5455, and 3239)

(1) *Coast.*

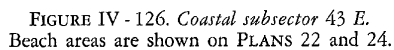
The eastern islands of this subsector lie just across Sia-hae (Jiiaa Pata) from Hwawon-pando (Haon peninsula) on the mainland. This channel, narrow and shallow in places, is much obstructed by small islets and rocks, as is Myondo-sudo (Mion-to Suido), its northern extension. The seaward approaches to these islands are obstructed on the northwest by a series of long, narrow banks lying roughly in a north-northeast - south-

southwest direction. There is deep water to the west and southwest, but the scattered islands of Huksan-chedo (Kokuzan Shoto) lie about 17 miles westward. Between the islands of this subsector and Huksan-chedo is the deep-water channel of Maemul-sudo (*Maikotsu-suidō*, Maibutsu Suido).

The islands of this subsector comprise 3 distinct groups and some scattered islands and differ sufficiently to make a general discussion of all impractical. They are, therefore, discussed by subdivisions.

1

These small scattered islands lie in Changjuk-sudo (*Chō-chiku-suidō*, Chegutsugu Pata), the southern approach to



Mokp'o (Chapters VI and VIII). The largest, Kasa-do (Kacha To) lies almost midway between the southernmost extremity of Naju-gundo, Naju Gunto (subdivision 3) and the western extremity of Chin-do. The island has two sharp peaks 554 feet and 600 feet in height. These and the lower hills about the island are covered with scrub pine. The slopes near the middle of the island contain some grassland, and there is rice cultivation near a village built at the head of a long, narrow indentation in the east coast. The bays and inlets formed by the island's irregular shape are all shallow, and the longest, that at the head of which the village lies, is completely filled with mud flats. With the exception of the shores of this bay which are partly diked, the coasts of Kasa-do are composed almost entirely of cliffs. Puksong-do (Pukusoru To), Oegong-do (Pagumu To), and some other small islets lie southwestward of Kasa-do at the entrance to Changjuk-sudo (*Chōchiku-suidō*). They are high and steep and mostly wooded.

Yul-to (Yuru To), Chok-to, P'yongsa-do (Pegusa To), Kosa-do (Kosa To), and Ku-do are scattered near the northeast end of Changjuk-sudo (*Chōchiku-suidō*). The last-named islet is grass-covered, the others wooded. P'yongsa-do and Kosa-do lie on a connecting shoal which extends some distance to the south and west. Of the many small, rocky islets lying between these and Kasa-do, the largest, Chuji-do (Sushi To) and Yangdok-to (Ryotoku To) are high, somewhat pointed, and wooded with scrub pine.

2

Ui-kundo (Ui Gunto) is the name given to the small group formed by Ui-do and the islets surrounding it. This island is very hilly, and its coasts, steep all around except for one short beach (beach area (229), TABLE IV-34) are bordered by cliffs near the extremities of the promontories. It is almost entirely surrounded by shoals. There are 5 small villages charted. Soui-do (Soui To), a group of islets immediately east of Ui-do, lies on a bank separated from the shoal water around Ui-do only by a very narrow channel. Chuk-to (Chuku To) and Pi-do (Kodori To) to the southeast are high and bounded by cliffs. Small, rocky islets and rocks lie near them. *Ōrak-tō* (Onaku To), south of Ui-do, and Nu-do (Teinui To; Yu-do on PLAN 24) and Kyongch'i-do (Peruchii To) to the north, are rocky and cliff bound. Ch'ilbal-to (Irikobari To), about 10 miles north by west of Ui-do, is a little more than a cliff bound rock, important mainly because of its light.

3

This large group of islands sometimes referred to as Naju-gundo (Naju Gunto) is separated from the mainland by Sia-hae (Jiiaa Pata) and Myondo-sudo (Mionto Suido). The islands lie close together on a group of banks which are separated only by narrow channels in which depths vary from 3½ to 25 fathoms. This group is composed of 11 fairly large islands and many smaller islets and scattered rocks. All of the larger islands and many of the islets are populated. Mud flats surround all these islands extending, in most cases, all the way to the edges of the shoals on which the islands lie. In some places the mud flats extend from one island to another, joining them. Kija-do (Kiisaa To) and Anch'ang-do (Anchagu To) are so joined, as are Sangt'ae-do (Shangutei To) and Hat'ae-do (Hautei To). Chaun-do (Chaaon To) the northernmost island of the group, is mostly hilly and has a general cover of conifer-

ous forest. There are, however, some rice fields on the lower parts of the island. Between the promontories of the irregular coast, there are stretches of sandy shore (beach areas (230), (231), and (233)) but these are, in all cases, fronted by sand or mud flats. The sand flats are fronted by a wide, shallow shoal. Several small, steep islets lie on the mud flat or just beyond the edge of the shoal.

Amt'ae-do (Amutei To; Omt'ae-do on PLAN 22), just southeast of Chaun-do, and separated from it only by a narrow channel, has a ridge of hills extending across it from east to west and is also hilly near its north and south extremities. Elsewhere the land is lower, and there is some grassland and considerable rice cultivation. The mud flat that completely surrounds the island joins to it 2 small islands off the southwest coast, as well as the islets to the west, north, and east.

P'algum-do (Parukumu To), the next island southward, is composed of lower and less steep hills. It is generally wooded, but there is cultivation on its more gentle slopes. Numerous islets lie on the mud flat which extends eastward and northward from its eastern end. The mud flat on which lie the islands of Kija-do (Kiisaa To) and Anch'ang-do (Anchagu To) also is dotted with small, steep islets. Kija-do is very hilly across its whole northern side and along the most of its coast. There is lower ground in the central part and a short beach in a bay at the northwest (beach area (232)). All of Anch'ang-do is high, except a small area in the northeastern part.

Pigum-do (Pigumu To) and Toch'o-do (Tourutsuo To), the westernmost islands of the group, lie close together, separated by a narrow channel called Pigum-sudo (Pigumu Suido). Both islands are hilly on the west and south. The northern extremity of Toch'o-do and the northwestern extremity of Pigum-do are precipitous. Elsewhere, on the islands, there are low areas, partly bounded by dikes, and gentle slopes on which rice fields and some scrub pine cover are found. There are several beaches (beach area (230)). The higher parts of both islands have a cover of pines and other conifers. Many small islets lie along the mud flats around each of these two islands.

Haui-do (Haui To) is separated from the mud flat on which lie Sangt'ae-do and Hat'ae-do by a narrow and crooked channel. These 3 islands are the southernmost of the group. All 3 are very hilly and generally wooded on the offshore slopes. They are populated, however, and there is some cultivation in the valleys. Haui-do and Hat'ae-do are connected by a ferry. Islets surround all 3 of these islands, and there are many rocks just off the mud flats and shoals particularly in the channel between Haui-do and Nungsan-do (Touchi To), an islet which lies off its west coast and is connected to it by ferry. Two other large islets, Taeya-do (Taiya To) and Sin-do (Shin To), lie a little farther off the west coast of Haui-do.

Changsan-do (Chagusan To), lying between Sangt'ae-do and Anch'ang-do, is very irregular in shape, its coast being largely made up of a series of long, slender peninsulas separated by deep inlets. The mud flats around the island extend to the ends of the peninsulas and often beyond. Considerable reclamation of the mud flats is indicated particularly on the east and south sides of the island. The larger part of the island is hilly, with a maximum altitude being 672 feet, but there is a comparatively large area of low ground on which some grassland and considerable cultivation are to be found. Many islets

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lie on the flats and on the shoal which extends southward and westward from the southeast part of the island.

Northwestward from this group of islands, there is a series of banks lying roughly in a north-northeast - south-southwest line and about 3½ miles off the northwest coast of Chaun-do.

There are no above-water islands on these banks, but one spot is charted as awash at low water and depths of ¾ fathom to 2½ fathoms prevail over the banks.

(2) *Landing beaches.*

TABLE IV - 34

LANDING BEACHES OF COASTAL SUBSECTOR 43 E
Reliability FAIR. (PLANS 22 and 24)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(229) E shore of Ui-do. (PLAN 24)	Generally clear, but bottom flat and approach channeled.	Pocket beach 0.2 mi.	50 to 75 ft.	1 on 10.	Surf moderate.	Sand and pebbles.	Small flat encircled by high hills.	Trail connects to other parts of island.
(230) W shores of Toch'o-do, Chaun-do, and Pigum-do. (PLANS 22 and 24)	Generally obstructed; fronted by mud flats.	Several strip and pocket beaches; up to 1 mi.	50 to 75 ft.	1 on 10.	Surf generally heavy with NW winds.	Sand, probably firm.	Small flats backed by rough hills of islands.	Trails within 1 mi. connect to other parts of islands.
(231) SW shore of Chaun-do. (PLANS 22 and 24)	Partly obstructed; bottom flat; fronted by sand flats.	4 beaches; max. 0.8 mi.	25 to 50 ft.	1 on 10.	Surf light; moderate with SW winds.	Firm sand.	Small flats and hills.	Trails connect from E central beach to other parts of island.
(232) NW shore of island SW of P'algum-do. (PLAN 22)	Approach channeled; beach fronted by mud flats.	0.7 mi.	25 to 50 ft.	1 on 10.	Surf light.	Sand, pebbles, and mud.	Backed by steep hill slopes.	Trails lead to ferry crossings to nearby islands.
(233) NE shores of Chaun-do and Amt'ae-do. (Omt'ae-do on PLAN 22)	Partly obstructed; fronted by wide mud flats.	4 beaches; 0.2 to 1.2 mi.	15 to 25 ft.	1 on 15.	Surf moderate on W beach; light elsewhere.	Sand.	Narrow flats encircled by hills.	Trails connect beaches to ferry to adjoining islands.

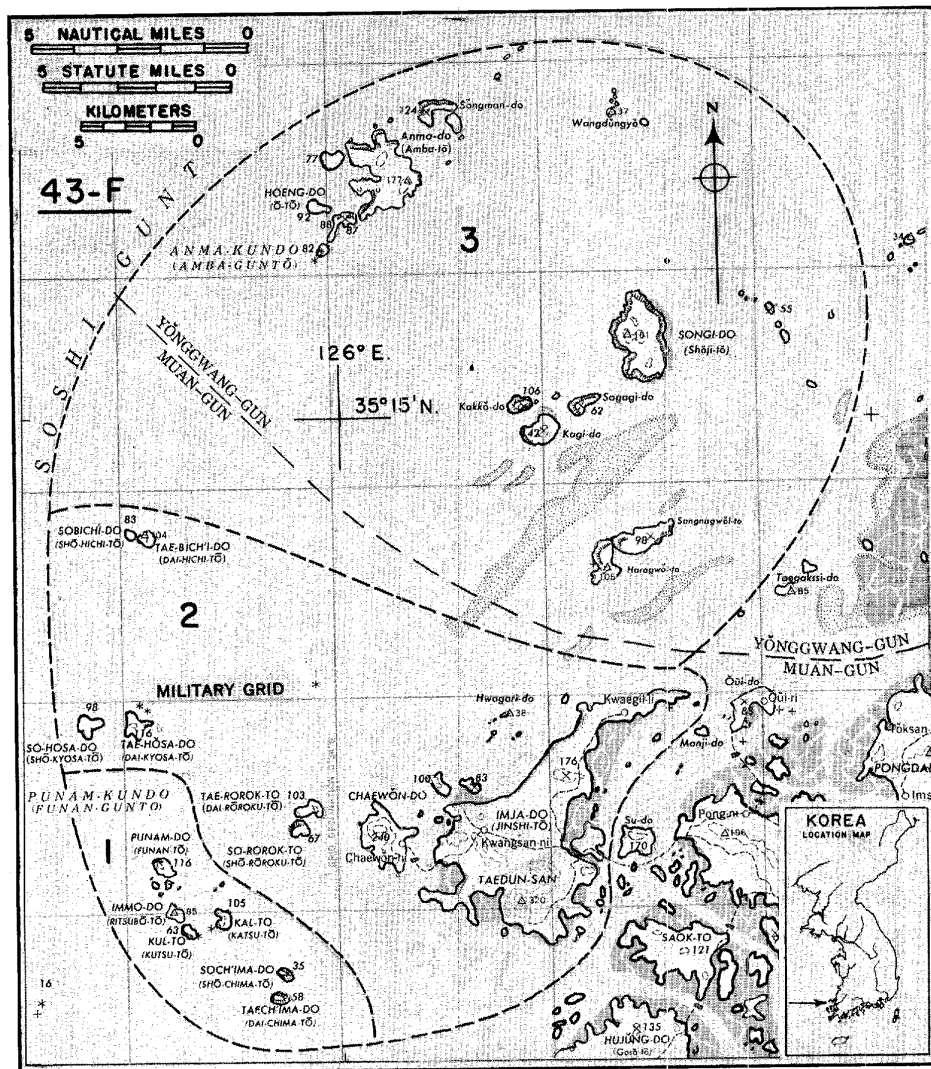


FIGURE IV - 127. Coastal subsector 43 F.
Beach areas are shown on PLAN 25.

F. Islands between $35^{\circ}00'N$ and $35^{\circ}23'N$, and between $125^{\circ}50'E$ and $126^{\circ}15'E$.

(PLAN 25; FIGURE IV - 127; U.S.H.O. charts 3238, and 5454)

(1) Coast.

The islands in this subsector lie along the southern half of a broad shoal under 10 fathoms or less which extends as much as 20 miles westward for about 33 miles along the coast. There are 5 small island groups and several scattered islets. Most of the islands are steep and rocky, Imja-do (Yeichaa To) being the only notable exception. The approach to these islands is obstructed by the westward extension of the shoal along which they lie, and to a much greater extent by many shallow, and in part drying, banks that are scattered among them.

1

Punam-kundo (Punan Gunto) is a small group of islets lying on 2 shallow banks. All these islands are steep and their

coasts are largely composed of cliffs. Punam-do (Punan To), Immo-do (Ritsubo To), Kul-to (Kutsu To), as well as 2 or 3 smaller islets, lie on one connecting bank, which has depths from $1\frac{1}{2}$ to $2\frac{1}{2}$ fathoms. Kal-to (Kari To) is situated at the south end of another shallow bank which lies parallel to the north - sound trend of the larger one connecting the other islands. The islands of this group are partly wooded in their upper slopes and are inhabited. Soch'ima-do (Chaachima To) and Taech'ima-do (Kunchima To) are 2 very small, rocky islets lying in deep water to the southeast of Kal-to. The coasts of both are composed entirely of cliffs.

2

Imja-do (Yeichaa To) lies on a mud flat which reaches seaward to the ends of all its promontories. Shoal water extends for some distance northward and southward from the mud flat. The broad southern portion of the island is largely hilly and its promontories are steep. However, there are low areas at

some places along the south coast extending from the foot of the hills to the sandy or diked shores. Rice is cultivated on these lowlands and the hills are largely covered with grassland and scrub pine. The long, narrow arm of the island extending northward and eastward is mostly low with extensive grasslands and irrigated rice fields. There are some hills on the east side of this arm and some bluffs along the northern extremity, but the hills are low and grass-covered. The coast on the northwest side of this peninsula is sandy (beach area (237), TABLE IV - 35), fronted by a narrow mud flat and a broad area of shoals. On the west side the coast is probably composed of mud with a few beaches (beach area (236)). Grasslands, and rice fields run to the edge of the extensive mud flat and there has been some dike construction and reclamation. A large islet having similar topography, coastline, and land use lies on the mud flat just off the east coast of Imja-do; a road across this island is connected to Imja-do and, by ferry, to Chi-do (Chi To) and the mainland, eastward.

Several smaller islets, low and grass-covered, lie off the west coast of Imja-do. Chaewon-do (Cheion To) a large islet, also lies off the west coast. This islet is hilly and mostly surrounded by cliffs and bluffs. It is largely grass-covered but is partly wooded on the higher slopes. There are small stretches of sandy shore (beach area (236)). Sobich'i-do (Chaapitchi To) and Taebich'i-do (Kumpitchi To) are 2 small rocky islets lying about 10 miles to the northwest of Imja-do. They are connected by a shoal under 3 fathoms. Sohosa-do (Chaahosa To) and Tachosa-do (Kunhosa To) lie westward of Imja-do. Shoals extend southward from Sohosa-do and northward from Tachosa-do. Both islands are high and steep; their coasts are largely composed of cliffs. Tachosa-do is partly wooded.

3

Anma-kundo, the group of 7 islets at the northwest end of this subdivision, is surrounded by numerous rocks. The islets, themselves, are steep and rocky, and cliffs occur along many of the coasts. There are only a few beaches (beach area (241)). The largest island, Anma-do (Amma To), rises to a rocky summit of 579 feet. Depths of 4 to 13 fathoms come quite close to the shores of these islands. A small shoal under 2 fathoms connects Songman-do to another small islet just southward of it. A shallow anchorage in $5\frac{1}{4}$ to 6 fathoms is charted in the shelter between the southwesternmost extremity of Anma-do and 2 islands just off this extremity. (Chapter VI, 64)

Wangdungyo is a group of several large rocks lying about 4 miles east of Songman-do.

Songi-do (Songui To) lies on the northwestern edge of a bank which extends about 6 miles southwestward and 4 miles northeastward of it. Parts of this bank dry at low water. The coasts of Songi-do are almost entirely cliffs. Three smaller islets, Sogagi-do, Kagi-do (Taikakuri To), Kakko-do lying southwestward of Songi-do, are also high, steep and largely cliff bound. All 3 of these islands lie along the bank running southwestward from Songi-do. The greatest charted depth between them and the larger islet is $3\frac{1}{2}$ fathoms. Many drying and under-water rocks are found in this vicinity.

Sangnagwol-to and Haragwol-to lie on a connecting mud bank. Both are rocky, and cliffs occur along their coasts. The mud bank on which these 2 islets lie is detached from the larger bank west of it. Several detached banks and drying rocks lie northeastward of these islands and between them and the mainland.

(2) Landing beaches.

TABLE IV - 35
LANDING BEACHES OF COASTAL SUBSECTOR 43 F
Reliability FAIR. (PLAN 25)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(236) S shore of Chaewon-do, Imja-do, Saok-to, and NW shore of Hujung-do.	Fronted by mud flats and extensive shoals.	Short beaches; max. 0.8 mi.	15 to 25 ft.	1 on 15.	Surf moderate.	Sand and pebbles.	Narrow flats backed by hills.	Trails only; ferries interconnect islands.
(237) NW shore of Imja-do.	Obstructed by islands, shoals; fronted by mud flat.	4.3 mi., also short beach to NE.	25 to 50 ft.	1 on 15.	Surf heavy with NW winds.	Sand.	Low hills and small flats.	Isolated except for trails 1 to 3 mi. inland on island; island connected to mainland by ferry.
(241) Anma-kundo.	Approaches channeled or obstructed by island.	2 beaches: N beach 0.8 mi.; S 0.2 mi.	15 to 25 ft.	1 on 10.	Surf generally moderate; heavy on S beach with W winds.	Sand and pebbles.	Steep slopes of hilly islands.	None reported.



FIGURE IV - 128. Coastal subsector 43 G.
Beach areas are shown on PLANS 22 and 25.

G. Mokp'o to northern entrance point of Hamp'yang-man (Hampyon Wan).

(34°47'N, 126°23'E; 35°11'N, 126°21'E)

(PLANS 22 and 25; FIGURE IV - 128; U.S.H.O. charts 3238 and 5454)

(1) Coast.

The coast in this area is fringed by broad mud flats on which lie many irregularly shaped islands and numerous small islets and rocks. Two long, narrow peninsulas extend far out into the flats; their many slender arms being separated from some of the islands only by very narrow channels. Similar channels

separate the islands from one another. The nature of the coast in this area varies widely; the only feature common to all parts being the off-lying flats. Cliffs, mud, and sand shores are all found and some reclamation by dikes has been done. The woods along the coast in this sector consist almost entirely of scrub pines and other conifers. The peninsulas, islands, and the mainland are hilly and largely wooded, though they are inhabited and there is some cultivation. A major road runs northward from the port city of Mokp'o (Chapters VI and VIII) along the seaward slopes, coming quite close to the coast in places. Close north of Mokp'o is reported to be Moppo landing ground (Chapter XIV).

1

From Mokp'o to the base of the first of the two long slender peninsulas, the coast is much indented but the indentations and separating promontories are not so extreme in length and irregularity as those of the peninsulas, themselves. This whole segment of the coast is fronted by mud flats and the inlets are entirely filled with them except for very narrow, shallow channels. The extremity of the peninsula on which Mokp'o stands is high, steep, and largely fringed with cliffs. From this elevated headland to and including the shores of the first large inlet northward, the coast is generally steep, though cliffs occur only in small and scattered spots. Several coves along the coast have been diked across and parts of the flats reclaimed for rice cultivation. Except in these reclaimed areas, the land behind the coast rises rather steeply and is generally wooded.

Between the first and second inlet the coast is steep and cliffs appear in several places along the water's edge. The hills are wooded here. Along the head and the southern side of the second inlet, some dikes appear and there is rice cultivation behind them and along small strips of mud shore. The shores along the long, slender peninsula, which encloses this inlet, and a small peninsula within the inlet itself are steeper and generally fronted by bluffs. Both these peninsulas are wooded. Northward of this peninsula and to the end of this subdivision, the coast is somewhat less precipitous. Stretches of sand (beach area (235), TABLE IV - 36) and mud shore appear, particularly along the southern shore of the northernmost inlet. The hills come to the water's edge along two or three promontories but though steep, do not end in cliffs. Rice is grown close to the sea behind the sand and mud stretches, but elsewhere, the hinterland is generally wooded.

2

The two peninsulas and many islands in this subdivision are much alike in topography, terrain, and use. They are all grouped closely together on a large mud flat, broken only by

numerous narrow channels. These channels have depths up to 10 or 12 fathoms in places, but are much obstructed by rocks and the controlling depths in most of them are much less. The coast lines vary greatly, being composed of alternate stretches of sand and mud and frequently broken by cliffs and bluffs. The few promontories which extend across the mud flat to reach open water are, almost without exception, rocky and very steep. Sandy stretches are found most frequently in the southern half of the subdivision, particularly on Aphae-do (Aapai To), Chonjung-do (Ujon To), Koi-do (Koi To), and the south end of the more southern of the 2 peninsulas (beach area (235)). There is a long, sandy beach in the bight formed by the division of the 2 peninsulas (beach area (238)). The terrain generally is composed of rolling hills, partly wooded and partly covered with grasslands, but there are many areas of gentle slopes and some small alluvial valleys. At places along the front of the cultivated areas, dikes have been built and small areas of the flats reclaimed for cultivation. The islands and peninsulas are dotted with villages and farm settlements and are connected by a system of roads and tracks which cross the narrow channels by numerous ferry lines.

3

The first $2\frac{3}{4}$ miles from the southern end of this subdivision are composed of sandy shore backed partly by bluffs and elsewhere by wooded slopes. The rest of the coast is largely cliffy though there are short stretches of sand especially around the heads of indentations (beach areas (239) and (240)). Off shore a wide mud flat extends along the whole coast and fills the inlets. Very small, narrow valleys all along this coast are utilized for rice cultivation, but generally the terrain behind the shoreline is hilly, comprising the foot hills and southward slopes of a high range a short distance inland. The hills are largely wooded.

(2) Landing beaches.

TABLE IV - 36
LANDING BEACHES OF COASTAL SUBSECTOR 43 G
Reliability FAIR. (PLANS 22 and 25)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(235) Group of islands NW of Mokp'o. (PLAN 22)	Approaches channeled; beaches fronted by extensive mud flats.	Many beaches; max. 2 mi.	15 to 25 ft.	1 on 10.	Surf light or absent except on westernmost.	Sand and pebbles.	Beaches fringe shore of irregular hilly islands and long branching peninsula from mainland.	Trails only; islands interconnected by ferries.
(238) Shores of irregular peninsula extending NW near Mangun. (PLAN 25)	Approach channeled; beaches fronted by wide mud flats.	Many beaches; average 1 mi.	10 to 25 ft.	1 on 15.	Surf light or absent.	Sand.	Steep slopes and narrow, steep valleys of rugged, irregular peninsula.	Narrow road along main trunk of branching peninsula; trails connect to road.
(239) Shore W of Hamp'young. (PLAN 25)	Approach channeled; beach fronted by extensive mud flat.	3.3 mi.	15 to 25 ft.	1 on 10.	Surf light or absent.	Sand.	Hill slopes and narrow valleys.	Trails within 1 mi. lead to Hamp'young 3 mi. inland.



FIGURE IV - 129. Coastal subsector 43 H.
Beach areas are shown on PLAN 25.

H. Northern entrance point of Hamp'yong-man (Hampyon Wan), to north side of Ch'ulp'o-hang (Chupponei Kaye).

(35°11'N, 126°21'E; 35°36'N, 126°28'E)
(PLAN 25; FIGURE IV - 129; U.S.H.O. chart 3238)

(1) Coast.

Mud flats border the shore of the southern part of this subsector and sand or mud flats are present in some of the inlets

farther north. The water off shore is generally shallow, a shelf of less than 10 fathoms extending about 16 miles out. Approaches to the southern part of the subsector are obstructed by numerous off-lying sand banks, some of which dry in spots at low water. There are also numerous islands off this part of the coast. The middle part of the subsector is unobstructed, except for the shallow water over the shelf. The north end is obstructed by islands lying 8 miles or more out and by a few shallow spots and drying rocks closer in shore. The coastline

in this subsector varies greatly; stretches of cliff, mud, and sand are all found. The coast in this region is mostly backed by hills which rise to considerable heights, particularly toward the north. There is one alluvial valley in the southern portion and a few very small valleys and a narrow strip of coastal plain farther north.

1

This subdivision of the coast is fronted by a broad mud tidal flat which extends along its whole length and fills the 2 inlets. From the base of the grassy promontory which forms the south end of the subdivision, around the inlet and to the extremity of the next promontory, the coast is generally steep. There are 2 small stretches at the head of the inlet fronting low plains where dikes have been built. Small areas behind these dikes are utilized for cultivation, but the slopes of the hills elsewhere around this inlet are generally covered with trees and grass. Kaum-do lies just off the end of the promontory which forms the north side of this inlet. The island, like the mainland, is hilly and largely wooded. There are, however, some narrow strips particularly along the coast that are utilized for rice cultivation. There are 2 villages on the island. Salt pans have been constructed in part of the area between the island and the mainland.

Along the southern shore of the second inlet a narrow strip of low land separates the hills from the water's edge. Rice is cultivated along this strip which widens at the head of the inlet and becomes a part of the alluvial plain that extends some distance inland. This plain takes in and extends inland of a promontory which forms the northern side of this inlet. There are several villages or settlements scattered about the plain and extensive rice cultivation on it. The shores of the low promontory are largely diked; there are beaches on the northern side (beach area (240), TABLE IV - 37).

Northward of this promontory the shore is lined for some distance with salt pans and here the hills again come closer to the shore. Northward of these salt pans and to the end of this subdivision, the coast becomes quite steep again and cliffs and numerous offshore rocks appear.

2

The coast along this stretch is steep and very rocky, and is bounded by a narrow sand flat. Though there are occasional small pockets of sand (beach area (242)), the shore is generally fringed with cliffs and rocky ridges. Some underwater and drying rocks appear off shore. Except in the inlets, the hills generally come quite close to the sea and slope steeply down

to the water's edge. They are covered with grass and coniferous forests.

Two steep rocky islands lie at the entrance to the first inlet. The shores at the entrance are also composed of rock and cliff. The inlet itself is filled with mud flats and there are salt pans in the head of its northern arm. Though there are one or two small cultivated areas protected by dikes, the shores of the south arm of the inlet are generally steep. There is a village at the entrance to this part of the inlet, and the town of Popsongp'o (Popu-sompu) lies on the south side of the promontory which divides the arms. Around the north arm of the inlet, the slopes are more gentle and there is more diking and cultivation. There are rice paddies on several low or gently sloping areas.

The southern side of the more northern inlet is generally steep and the shore tends to be rocky. There are one or two stretches of sandy shore, however, fronting very small valleys in which there is grass or rice cultivation. This inlet also is filled with mud flats and there are salt pans at its head. The inner part of the north shore of the inlet is diked and cultivated, but toward the entrance, the coast becomes steep again and is rock-bound.

3

This subdivision comprises the shore north of Popsongp'o, described in (2) a and (2) b as beach area (243).

4

From the southern limit of this subdivision northward to the entrance of Ch'ulp'o-hang (Chupponei Kaye), the coast is sandy (beach area (244)) but is fronted by a mud flat. There is a small tidal flat behind the south end of the sandy shore and salt pans have been built on it. Behind the rest of the sandy stretch there are rather gentle slopes with some rice cultivation and some grasslands. A few scrub pines appear in the grassland.

The inlet is filled with sand and mud flats except for a channel which has depths of 2 fathoms for about 4½ miles inland. The channel from this point to Ch'ulpo (Chuppo), however, has a limiting depth of ¼ fathom at chart datum. Salt pans front a great part of the coast. Much of the adjoining shore is protected by dikes, behind which rice is cultivated in small flats at the foot of the hills. Elsewhere the hills come quite close to the water's edge or leave a narrow strip of low or gently sloping land which may be cultivated. The north side of the entrance to this inlet is steep and though some sand appears along the shore (beach area (246), TABLE IV - 39), there are rocky ledges along and just below the water line.

(2) *Landing beaches.*(a) *General.*

TABLE IV - 37

LANDING BEACHES OF COASTAL SUBSECTOR 43 H
Reliability FAIR. (PLAN 25)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(240) Vicinity of Pongdok-san.	Fronted by extensive mud flats.	Several beaches under 1 mi., one 2.8 mi.	15 to 25 ft.	1 on 10.	Surf moderate on N, light on S.	Sand.	Hill slopes.	All except N beach isolated; narrow road runs behind half of N beach, connecting by ferry to Popsongp'o.
(242) Shore W of Popsongp'o.	Partly obstructed; bottom flat; sand flats front beach.	Several beaches, all under 1 mi.	15 to 25 ft.	1 on 10.	Surf moderate.	Sand and pebbles.	Steep hill slopes.	Trail skirts shore; connects by roundabout route to Popsongp'o.
(243) N of Popsongp'o. (FIGURE IV - B - 62) (See also (b) below.)	Approach shoal, partly obstructed; sand flat fronts beach.	3.4 mi., interrupted by streams and rocky point.	150 to 200 ft.	1 on 30.	Surf heavy with W quadrant winds.	Firm sand.	Irregular flat up to 1 mi. wide, backed by rolling hills.	Network of trails leads to Popsongp'o and Ansan-ni.
(244) Shore NW of Ansan-ni.	Obstructed; fronted by broad mud flat.	2.9 mi.	150 to 200 ft.	1 on 20.	Surf moderate.	Firm sand.	Small sandy flat backed by rolling hills.	Network of trails leads 20 mi. inland to main road and R.R.

(b) *North of Popsongp'o (Popusompo), (beach area (243)).* Reliability FAIR. (PLAN 25).

1. LOCATION AND EXTENT. An interrupted sand beach extends for 3.4 miles on the southwest coast of Korea, 6 miles north of the city of Popsongp'o (Popusompo), at approximately 35°27'N, 126°27'E. The beach fronts one of the few areas of coast in this sector where an unchanneled approach from the open sea is possible, where the ever-present tidal flat is sandy rather than muddy, and where the beach is backed by flat or rolling country over which cross-country movement by vehicles is possible at least by winding routes. However, the nearest railroad and road are 20 miles inland at this point and any landings must overcome the difficulties imposed by a 20-foot tide.

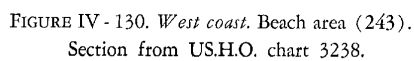
2. SEA APPROACH. (FIGURE IV - 130) The 60-foot depth line is about 15 miles off the beach. The approach to the 30-foot depth is clear, but the depth line lies 3 miles off the south end of the beach, and 4 to 7 miles off the north end. The 18-foot depth line is 6,000 feet from the south end of the beach, and maintains this distance almost to the north end, where it swings abruptly seaward. The sandy drying flat fronting the beach has a uniform width of 2,500 feet, except at a point 1/2 mile from the south end, where it widens to 0.7 mile, extending out to a small rocky island which is the only danger to be avoided in the nearshore approach. The bottom slope seaward of the drying flat out to the 18-foot depth is approximately 1 on 180, and the slope of the drying flat is probably about the same. A limited amount of shelter for anchorage would be provided on the east side of the island, Wi-do (Ui To), in 7 fathoms of water over a bottom of fine sand, 5 miles west of the beach. Ten miles off the beach there is generally 7 fathoms of water over mud or sand and mud.

The winds blow from the north or northwest from September to June; from the southwest from June through August. Average wind velocities are under 10 m.p.h. except in winter,

when they range from 10 to 15. Fog in summer occurs from 5 to 10 days per month. The exact tidal range for this area is not known; the spring tide probably ranges between 15 and 20 feet; the neap 7 to 10 feet. Tidal currents parallel to the shore are undoubtedly strong.

3. CHARACTER OF BEACH. The southwest end of the beach is separated from the deeply indented inlet south of Konip'o (Koip'o on PLAN 25) by a small hilly headland. From its southwest end the beach extends unbroken 0.8 mile north-northeast to a small rocky point. North of the point a lagoon mouth 300 feet wide (width exaggerated on PLAN and FIGURE) interrupts the beach. Beyond the lagoon the beach continues north-northeast in a straight line to its arbitrarily chosen limit at the mouth of a second inlet. The sandy beach is actually continuous beyond the second inlet, but it is not included in the described area because it is fronted by an extensive mud flat. The described beach is composed of fine sand, is probably 150 to 200 feet wide, fading almost imperceptibly inland into the grass- and scrub-covered sandy plain. The foreshore slope is probably 1 on 20 or flatter, the backshore is flat. Both the beach and the drying sand flat fronting it are probably firm, although the sand flat may be soft near its seaward margin. However, the surface of the sand flat may be very irregular; heavy surf has a tendency to scour holes and irregular channels in such places. The surf belt is wide, surf breaking in a wide belt far from the shore; the belt advances and retreats with the rise and fall of the tide. Surf is heaviest with the strong northwest winds of winter; is moderate during the summer, the islands to the southwest giving some protection from the prevailing swell from the southwest. The beach, so far as is known, is uninhabited, and no structures have been built. Water can be obtained from shallow wells a few hundred feet inland.

4. ADJACENT TERRAIN AND EXITS. The southwestern 0.8 mile of the beach is backed by a low sandy flat with a



maximum width of 0.4 mile. The flat is enclosed by steep hills except for a narrow pass from which a trail leads inland. The north 2.6 miles of the beach is backed by a low sandy strip 0.3 mile wide, which gives way inland to a cultivated lowland backed by rolling hills. Trails lead inland from the inner edge of the sandy strip, swinging north from the south end of the beach and south from the north end in order to avoid the inlets that trend parallel to the shore and constrict the exit from the flat behind the beach to a width of 1.5 miles. Access to the city of Popsongp'o to the south, or to the main highway and railroad 20 miles inland, is over a continuous belt of hills rising to 500 to 600 feet, through which there are no continuous valleys. The low sandy strip adjacent to the beach represents a potential airfield site.

I. Islands between $35^{\circ}34'N$ and $36^{\circ}01'N$, and between $126^{\circ}04'E$ and $126^{\circ}30'E$.

(PLAN 25; FIGURE IV - 131; U.S.H.O. chart 3238)

(1) *Coast.*

This division consists of many small islands and islets scattered over 570 square miles. The islands lie from 7 to 25 miles off the coast of the mainland. The seaward approaches are generally clear and deep. Shallow water and obstructing islets and rocks lie between some of these islands and the coast of the mainland. This is particularly true of Kogunsan-kundo, which is connected to the mainland by a shoal under $1\frac{1}{2}$ to $2\frac{1}{2}$ fathoms. Drying sand flats extend from the mainland to within 2 miles of the easternmost point of this group. The islands in this division are generally high; their coasts are

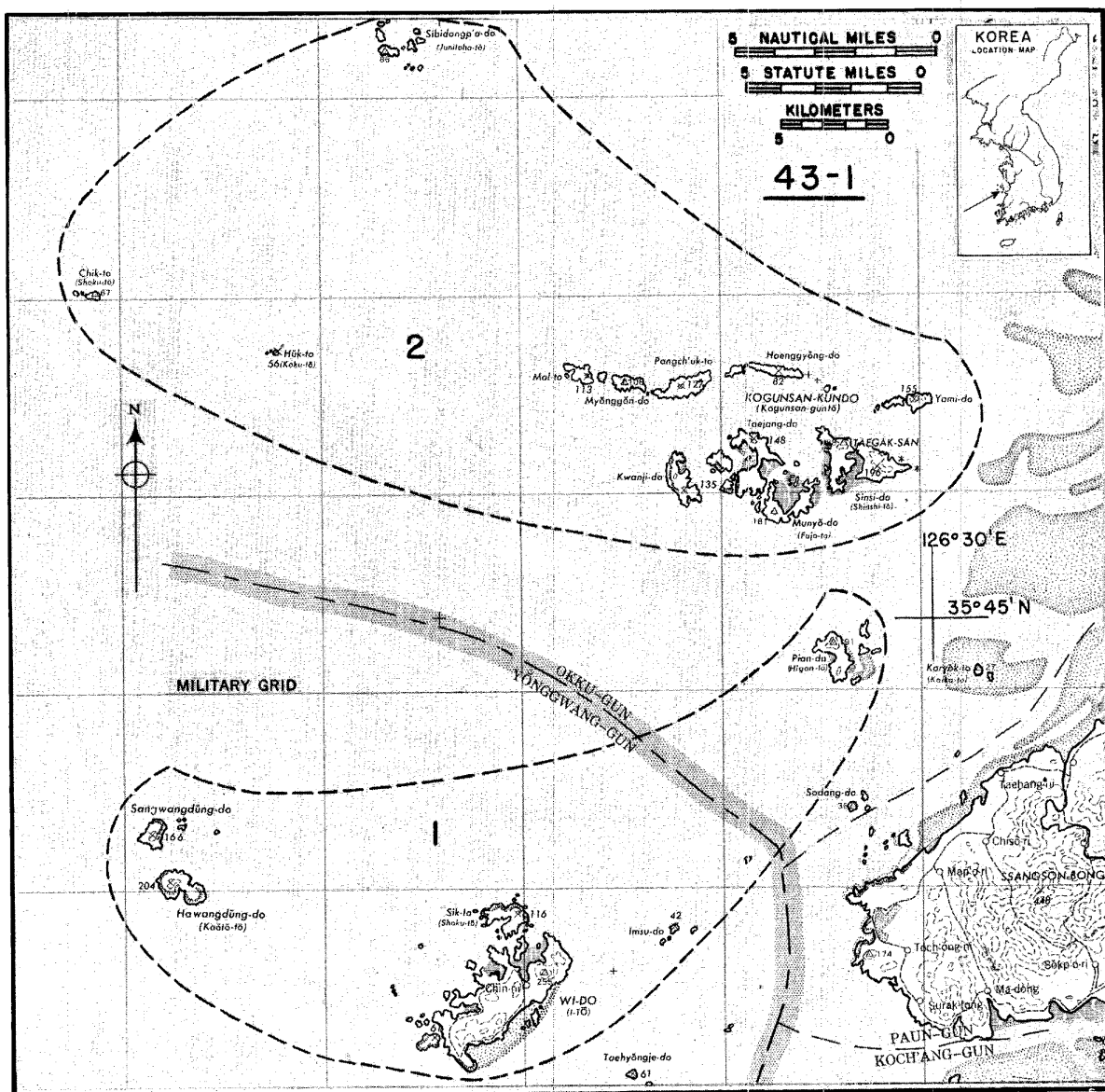


FIGURE IV - 131. Coastal subsector 43 I.
Beach areas are shown on PLAN 25.

largely rocky and in many places are bounded by cliffs. Small rocky islets and underwater or drying rocks are numerous in the immediate vicinity of the islands.

1

Wi-do (Ui To), the largest island in this subdivision, is composed mostly of steep, wooded hills, the highest being about 831 feet. The southeast coast of the island is particularly steep, with sheer cliffs at several places. Tidal sand flats (beach area (245), TABLE IV - 38) fringe most of the southeast side of this island. There is a small village on the shore near the middle of the southeast side. An islet, with cliffy coasts, lies at the outer edge of the sand flat opposite this village. The northwest side of Wi-do is much indented. Its inlets are mostly filled with sand and mud flats; and its coasts, particularly around the promontories, are composed of cliffs. There are small stretches of lower shore near the heads of the inlets and very small pocket valleys behind these shores are cultivated. The hills on this side of the island are somewhat less steep than on the southeast, and the wood cover is broken here and there by grasslands. Several rock-fringed and grass-covered islets lie off this coast.

Sik-to (Shiki To), a larger islet lying just north of Wi-do, is completely cliff-bound on its north side and its south side is fringed with cliffy promontories and rocky shore. Sand flats largely fill the inlets between the promontories. The islet is largely grass-covered, though some coniferous trees appear. This islet is surrounded by small above-water rocks.

Sangwangdung-do (So Wantsun) and Hawangdung-do (Tei Wantsun) are 2 islets lying about 6½ miles west-northwest of Wi-do. Both are steep, rocky, and largely bounded by cliffs. A few small islets and rocks are scattered off the east coast of Sangwangdung-do.

Pian-do (Pian To) lies nearly 10 miles northeastward of Wi-do. It is situated on the southwestern extremity of a shoal

that has no more than 3 feet of water over it and extends from the sand banks of the mainland. The island, steep and rocky, rises to a maximum height of 622 feet. Several very small islets lie on the shoal just eastward.

2

Kogunsan-kundo (Kokunsan Islands) is made up of 10 very small islands and many unnamed islets and rocks. These islands are all very hilly and largely grass-covered, though occasional patches of trees occur, particularly on the steeper slopes. The larger islands at the south edge of the group, Sinsi-do (Unkoru To), Munyo-do (Mokami To), and Taejang-do (Muiin To), have mud flats filling their larger inlets and extending short distances from the shore. These islands are all very irregular in shape. Their coasts are largely bounded by rocks and are almost everywhere steep, except at the heads of indentations (beach area (248)). The islands are inhabited, but little cultivated. Kotchi-do (Kochi To; Kwanji-do on PLAN 25) and the 2 islets lying between it and Taejang-do, have steep cliffs along a large part of their coast. Elsewhere the shores are largely composed of rocky ledges. They are mostly grass-covered, but some scrub pine occurs on Kotchi-do (Kwanji-do). The 5 other islands of this group are high, rocky, and very steep. They lie in an east - west line along the north edge of the group and the channels between them contain many rocks and tiny islets.

Huk-to (Komu Somu) and Chik-to (Chiku To) are little more than large rocks lying respectively 7¼ miles westward and 12 miles west by north of the western end of Kogunsan-kundo.

Sibidongp'a-do (Yorutsudompa To) is a small group of tiny rocky islets and rocks lying about 9 miles northwestward of Kogunsan-kundo. These islets and rocks are connected in 2 groups by 2 small shoals on which they lie. The highest peak of this small group is 283 feet.

(2) Landing beaches.

TABLE IV - 38
LANDING BEACHES OF COASTAL SUBSECTOR 43 I
Reliability FAIR. (PLAN 25)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(245) Shores of Wi-do and Sik-to.	Approaches channeled; beaches fronted by drying sand flats.	Several beaches; max. 0.6 mi.	25 to 50 ft.	1 on 10.	Surf moderate.	Sand and pebbles.	Narrow valleys or steep hill slopes of rugged islands.	Trails interconnect various beaches on Wi-do.
(248) Shores of Kogunsan-kundo.	Approaches channeled; beaches fronted by drying flats.	Several beaches, all under 1 mi.	15 to 25 ft.	1 on 10.	Surf moderate.	Sand and pebbles.	Steep slopes of hilly islands.	Trails connect parts of islands.



FIGURE IV - 132. Coastal subsector 43 J.
Beach areas are shown on PLAN 25.

J. From $35^{\circ}36'N$, $126^{\circ}28'E$, to $35^{\circ}57'N$, $126^{\circ}37'E$.
(PLAN 25; FIGURE IV - 132; U.S.H.O. chart 3238)

(1) Coast.

The approaches to this subsector of the coast are obstructed by sand flats, a shallow shoal extending seaward from the sand flats, and several groups of islands off shore in subsector I.

The coast of subsector J, with the exception of the short stretch along the promontory in subdivision 1, is mostly taken up with a wide inlet which is divided by a broad projection of cultivated land into 2 narrow inlets. Sand flats largely fill the inlet and extend up to 6 miles seaward from the entrance. The land around the inlet is very largely cultivated in rice paddies, and extensive diking and reclamation have been carried on for this purpose. The area is well-populated and there are several

towns situated near the rice fields. The major highway leading to Kunsan (Gunzan) passes along the north edge of the area and a network of secondary and unimproved roads connects the towns and villages. The principal towns near the inlet are Puan, Kumje, Man'gyong and Okku.

1

The coast along the southern half of this subdivision is very steep; the hills of the promontory, included in this stretch, fall abruptly to the shore and in many places end in cliffs. The hills have a covering of grass and scrub pine. There are a few sandy pockets here (beach area (246), TABLE IV - 39), and in one or two small valleys there is some cultivation. The northeastern half of the subdivision has a sandy shore fronted by sand flats (beach area (247)). The hills in this vicinity

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recede somewhat, leaving along the coast an area which is cultivated in rice.

2

In this subdivision a low coastal area has been greatly extended by reclamation of the flats. A long dike has been built out to a small island which forms the tip of the reclaimed area, thus separating the inlet into 2 parts; the area behind the dike is now planted in rice. The coastal plain is interrupted in some places by low, rolling, wooded hills. It is generally intensively cultivated and heavily populated. There are mud flats between the rice fields and the off-lying sand flats at the southern and northern ends of this subdivision. Kychwa-do (Keifua To) lies just north of the promontory at the beginning of this subdivision. It is a small island rising to a peak 810 feet high. It is generally grass-covered except for its eastern slopes on which are some trees. Much of its coast is cliffed, though there are 2 stretches of sand.

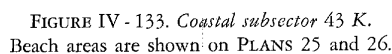
3

This subdivision, comprising the north arm of the inlet, is low and largely used for rice cultivation. Stretches of mud flat are frequent along its shores. Considerable reclamation has been done and most of the shores are diked. Only at one point, near the entrance and just west of the town of Okku, do the hills come very close to the coast. Generally there is a rather broad area of irrigated rice cultivation between the water's edge and the hills. From the northern entrance point of the inlet to the end of this subdivision, the shore is generally sandy and fronted by a broad sand flat (beach area (249)). Toward the northern end of the area, the inner part of the flat is mud. The entrance point is rocky, and near it there are low, wooded hills behind the beach. Further north some rice cultivation and grassland are found.

(2) Landing beaches.

TABLE IV - 39
LANDING BEACHES OF COASTAL SUBSECTOR 43 J
Reliability FAIR. (PLAN 25)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(246) W end of peninsula W of Ch'ulpo.	Generally obstructed by reefs or fronted by drying flats.	Many short beaches separated by irregular rocky shore.	15 to 25 ft.	1 on 10.	Surf moderate.	Sand and pebbles.	Narrow valleys in rice, or steep hill slopes of mountainous peninsula.	Narrow trails wind over rough mountains to Ch'ulpo and road 10 to 15 mi. inland.
(247) Shore W and SW of Sokpul-san.	Approach channeled; fronted by wide mud and sand flats.	5.7 mi., interrupted by many rocky points; 2 short beaches on Kychwa-do.	15 to 25 ft.	1 on 10.	Surf moderate; breaks in broad shifting belt across flats.	Sand and pebbles.	Narrow flats in rice, enclosed by hills.	Trails connect across hills terraced in rice to Puan, 7 mi. to E.
(249) Shore SW of Kunsan.	Fronted by wide shoals, mud or sand flats.	2 beaches: S 1.9 mi.; N 0.9 mi.	25 to 50 ft.	1 on 10.	Surf moderate; wide belt of surf advances and retreats with tide.	Sand; probably soft.	Rice paddies, dunes, salt pans all form obstacles to movement.	Trails connect to Kunsan, 7 mi. to NE.



distance beyond them. Narrower shoals border the north end of the subsector and the one large inlet in the vicinity is largely filled with mud.

1

This subdivision includes the entrance to the inlet on which lies the city and major port, Kunsan (*Gunzan*) (Chapters VI and VIII). This inlet is the comparatively narrow estuary of a navigable river; the southern entrance point is composed of a salient of reclaimed land enclosed by dikes. These dikes extend from the promontory on which the city of Kunsan stands, west-southwestward to, and beyond, a small islet and connect with the promontory which forms the beginning of this subdivision. This dike is largely fronted by a mud flat and the land behind it is all utilized for rice paddies. The promontory on which Kunsan stands is mostly composed of low hills, partly wooded. Beyond the city, on both sides of the stream, the low valley lands between it and the hills are taken up in rice cultivation. There

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are hills on the blunt promontory opposite Kunsan and also on that which forms the northern entrance point of the inlet. The inner promontory is largely wooded, while that forming the entrance point is lower and grassy. Between the two, as well as in small valleys between the hills on both promontories, there is cultivation. The Gunzan airplane landing ground is reported to be about 5 miles from Kunsan (Chapter XIV).

2

The shore in this subdivision is mostly sandy (beach area (250), TABLE IV - 40), though it is broken here and there by cliffs or rocky stretches, particularly in the southern part; some places have been diked. With the exception of a small plain near the southern end and one or two narrow valleys, all cultivated with rice, the coast is generally closely backed by low, rolling hills. The outer slopes of these hills and some of the valleys are grass-covered, while occasional steeper slopes behind have a cover of scrub pine and other conifers. This coast is generally fronted by mud flats with sand along their outer edge. The small inlets are all filled with flats. Several small grassy islets lie off the coast along the flats. The two northernmost have a few trees. There is a rocky ledge near the edge of the mud flat just off the most pronounced inlet in the middle of the subdivision and southward of the next prominent promontory. Other rocks submerged, drying, and above water are scattered about the flats and just beyond them. Rocky fringes occur along the shore at the entrance points and center promontory of the large inlet, and around each promontory northward to the end of the subdivision.

3

The coast along this subdivision is mostly sandy (beach area 252)), but is broken here and there by rocky patches, and along the shores of the inlet near the north end there are dikes (U.S.H.O. chart 3244). A drying sand flat extends off shore along most of the area except for a stretch near the middle where there is a rocky ledge. The sand runs across the entrance of the inlets, but the inlets themselves are filled with mud flats. A shoal extends a short distance beyond the flats along the whole of this stretch. The hinterland generally is hilly and wooded. There is, however, cultivation in the narrow valleys and some in low areas along the coasts and around the heads of the inlets.

The seaward end of the promontory which forms the south end of this subdivision is bounded by a fringing reef except where there are a few sand pockets. Along the north side of the promontory, however, the shore is mostly sandy. Four rocky extensions run northward from projections in this stretch. The two inlets near the southern part of the division are filled with flats. The hills generally fall steeply to the water's edge around both, but there is some cultivation in small valleys and in a dike-protected area near the head of the northern flat. Just northward of these indentations, a small sand-filled inlet is enclosed by a low sandspit. At the base of this spit is a cliff which is the beginning of a sandy stretch fronted by a fringing reef which extends about 2½ miles northward. Beyond this, the sand shore is again fronted by a sand flat to the entrance of the larger inlet at the north. The south entrance point of this inlet is a short sand spit, the north end of a long sand beach backed by comparatively low and partly cultivated land. Most of the shore of the inlet itself is diked, the remainder being largely sand. On the south side of the inlet, cultivated land extends a short distance inland from the dikes, while on the north side the hills generally come down to the coast and cultivation is limited to a few narrow valleys. The north point of the subdivision is formed by a seaward-extending arm of land which ends westward in rock-fringed cliffs. From near its tip a low peninsula extends southeastward about 1 mile. The seaward side of this arm is sandy along almost its whole length, cliffs appearing only at the two ends. The north end of this sandy stretch, however, is fronted by a rocky ledge. A few small, uncultivated grassy islands lie along the seaward side.

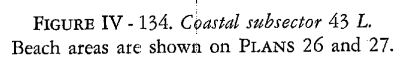
4

There are 5 islands and several small islets included in this subdivision; all of them are largely rocky and rock-fringed. Orang-do (Youjiku To) lies on a detached shoal which is separated by a narrow channel from a shoal which connects Naech'o-do (Sei Somu) to the mainland. Most of these islands are grass-covered, but there are a few trees and some cultivation on Orang-do and Kaeya-do (Kaiya To). Kaeya-do and Yon-do (Yon To) have short beaches (beach area (251)).

(2) Landing beaches.

TABLE IV-40
LANDING BEACHES OF COASTAL SUBSECTOR 43 K
Reliability FAIR. (PLAN 26)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(250) Shore W of Soch'on.	Obstructed in many places by rocks and reefs; broad sand and mud flats front beaches.	Many beaches; average 1.5 mi.	15 to 25 ft.	1 on 10.	Surf moderate; broad belt of surf advances and retreats with tide.	Sand.	Rolling hills, largely terraced in rice, rise up to 300 ft.; many beaches backed by low bluffs.	Main road and R.R. 1 to 5 mi. inland; closest 6 mi. N of Soch'on; net of trails gives access.
(251) Yon-do, Kaeya-do, and Chuk-to.	Obstructed; fronted by drying sand flats.	4 short beaches; max. 0.5 mi.	15 to 25 ft.	1 on 10.	Surf moderate.	Sand and pebbles.	Hilly islands; small flat with salt pans backs beach on Kaeya-do.	Trails interconnect parts of islands.
(252) Shore W of Ungch'on.	Generally obstructed; fronted by wide drying flats.	At least 10 beaches; up to 2 mi.	50 to 75 ft.	1 on 15.	Surf moderate; broad belt of surf advances and retreats with tide.	Sand.	Dune or hill slopes, rising inland to mountains up to 1,200 ft. high.	R.R. and main road roughly parallel shore 3 to 5 mi. inland; nowhere accessible except by trails over rough hills.



L. Anmyon-do (Ammin To) and off-lying islands.

(36°07'N to 36°37'N and 125°57'E to 126°29'E)

(PLANS 26 and 27; FIGURE IV - 134; U.S.H.O. charts 3238, 3244)

(1) Coast.

These islands differ greatly, both as to hydrography and topography. They lie from 300 yards (at Anmyon-do (Ammin To)) to 25 miles (at Och'ong-do (Osei To)) off the mainland.

From seaward, the approach to the outer islands is clear and deep. Those nearer inshore lie in shallower water obstructed by shoals, flats, and the outer islands. On the east, the islands are separated from the mainland by Ch'onsu-man (Sajan Kaye) which is a long, narrow gulf running northward between Anmyon-do and the mainland. There are many shoals, islets, and rocks scattered about this gulf and its entrance.

The islands lying close to the mainland are in many places fronted by tidal flats of sand or mud which, in turn, are fronted by shoal water. The islands lying farther off are in deeper water and flats are much less common.

1

The islands in this subdivision are all small and are generally steep and rocky. Many are completely bounded by cliffs and almost everywhere hills rise steeply from the coast. Och'ong-do (Osei To), the southwesternmost island of the group, is generally steep and its coasts are largely fringed with rocky reefs. There is an anchorage in a bay enclosed by an arm of land which forms the southeastern extremity of this island (Chapter VI, 64). A village and a sandy beach (beach area (261), TABLE IV - 41) lie at the head of the bay (PLAN 27). Oeyon-yolto (*Gaien-reitō*, Oiyonu Group) lies northeastward of Och'ong-do (PLAN 26). These islands are all steep and almost completely cliff-bound. There is a small beach on Oeyon-do (Oiyonu To) (beach area (254)). Many small islets and rocks are scattered among them. There is an anchorage in the area enclosed by the islands just southward of Taech'ong-do (Chapter VI, 64).

There is another group of small islands and islets lying east-northeastward of Oeyon-yolto. Ho-do (Ho To) and Nok-to (Noku Somu), the two largest islands of this group, and several smaller islets and rocks lie on a bank. Nearly all the islands in this group are high, cliff-bound, and fringed with rocky reefs. Ho-do has a stretch of sandy shore near the north end of its eastern side (beach area (254)) and a smaller stretch farther south. Reefs extend a short distance eastward from a rocky point between these sand stretches. Other reefs are found extending outward from several of these islands and some lie along the banks off shore. Shoals extend eastward from Taegilsan-do (Chirumi To), southward from Ch'u-do (Son Nyo), and northwestward from Oejom-do (Chirume Amu).

2

Anmyon-do (Ammin To) forms the western side of Ch'on-su-man (Sajan Kaye). It is a long, narrow island lying parallel to the coast in a north-south direction. Its north end is separated from a southward-extending peninsula of the mainland by a very narrow and shallow channel. The east side of this island is almost entirely fronted by mud flats. Around the south end there are sand flats with mud behind the sand in

the inlets. The west coast of the island is largely fronted by sand flats, again backed, in the inlets, by mud. The coast itself, other than the shore of the inlets, is mostly sandy, fronted in places by reefs and occasionally broken by small patches of cliffs.

The east coast of Anmyon-do is very irregular, being composed of a series of narrow indentations and separating promontories. Cliffs are frequent along promontories and along the many islets lying on the mud flats off shore. There are same patches of sand along the base of eroded bluffs. Elsewhere the coasts rise steeply to rolling hills generally covered with coniferous, and a few deciduous, trees. Only in a few small valleys is there any cultivation.

At the south end of the island, there is a broad inlet or bay filled with mud flats. The shores of the inlet are mostly sandy and backed by comparatively gentle, grassy slopes. There is a small village near each of the two entrance points. These villages are connected by a road which runs around the shores of the bay, and inland to join another road which runs the length of the island. The shores of the promontory eastward of this bay are sandy and are fronted by a broad sand flat (beach area (256)). Steep bluffs occur just behind the sandy shore at several places. There is a village at the southeastern extremity of the island. The western entrance point of the bay is composed of a sand spit extending southeastward from a low, grassy promontory. The shore at the base of the sand spit is rocky for a short distance, but beyond this small, rocky patch, the shore is composed of sand and gravel. This section of shore is fronted by a sand flat on which there are 3 rocky outcroppings.

There are 4 inlets of considerable size on the western side of the island. All are filled with mud flats. Grassy or wooded hills come close to the shores of all four. These shores are probably composed mostly of mud though short stretches of sand appear in each of the inlets. Sand flats extend across the entrances of all four. Between the first and second inlet from the south, the shore is sandy and fronted by a rocky reef, except near the entrance to the most southern, where sand flats lie off shore. The northern entrance point of the second inlet is rocky and fringed with reefs. Between this point and the southern entrance point of the third inlet, there is a long stretch of sandy shore fronted by a sand flat and backed by low, wooded hills. Reefs occur on both sides of the entrance to the third inlet and northward for over two-thirds of the distance to the fourth. The shore behind the reefs is sandy and is backed by hills which, in some places, end in bluffs just behind the beach. From about 1½ miles south of the entrance to the fourth inlet, a sandy shore stretches northward to a sand spit which is the end of the west coast. This sandy stretch is broken by only one patch of cliffs and rocks which lies about 1⅓ miles southward to its northern end. The sandy shore is fronted by wide sand flats and is closely backed by low, rolling, wooded hills.

Eastward and northward of the sand spit, which forms the northwest corner of the island, there is a broad inlet with 3 arms. The shores of this inlet are probably sandy. The inlet itself is filled with flats which are shown as sand on some maps and mud on others. U.S.H.O. chart 3244 indicates salt pans on the westernmost arm; these are not shown elsewhere. A promontory with sandy shores forms the eastern side of this inlet, and, with another sandy promontory to the northeast, encloses

a small sand-filled indentation. The shores here are closely backed by hills which are wooded around the indentation but grassy on the promontories.

From this northeastern promontory to the east side of the island, the coast is fronted by mud flats. Many of the hills backing this coastline end in bluffs near the water's edge.

3

Chuk-to (Denudee Island), lying near the middle of Ch'onsu-man (Sajan Kaye), is low and sandy. It lies on a small, sandy bank about $3\frac{1}{2}$ miles long north - south. A reef extends a short distance westward from its western extremity. A group of rocky islets and rocks lies just northwest of this island. A number of sandy banks, about 7 miles long north - south, lie between this island and Anmyon-do.

A group of several very small islets and rocks, some of them connected by shallow shoals, lies in the entrance to Ch'onsu-man. Southwestward of these, and south of Anmyon-do, there is a group of 5 islands and a large number of tiny islets and rocks. Of these, the largest is Wonsan-do (Onsan To). This island lies on a shoal which extends some distance southward from it. It has sandy shores along most of its south side (beach area (254)) and narrow reefs appear at both ends and at two small, blunt promontories. The shore is fringed by a comparatively narrow sand flat on which there is one small reef-fringed islet. The whole west end of the island is very steep and fringed by an unbroken border of reefs. The north shore is alternately sandy and precipitous. Two long, slender promontories extend northward forming 3 inlets or bays which are filled with mud flats. The east end of the island is rocky, except for one small pocket of sand.

Hyoja-do (Hyoja To) eastward of Wonsan-do and separated from it by a narrow channel, has cliffs along most of its west,

north, and south sides. Its northeast side is sandy and fronted by narrow, sand flats.

Kodae-do (Kodei To) is almost entirely surrounded by cliffs and reefs with only a small sand and gravel shore fronted by a sand flat along the north half of its east coast.

Oejanggo-do (Petchanko To) lies on a shoal extending southwestward from Anmyon-do. Its northeastern extremity and its southwestern half are high, steep, and reef-fringed. Between the two, however, there is a low, sandy isthmus with sandy shores and off-lying sand flats.

Sapsi-do (Sapuchu To), lying southwestward of Wonsan-do (Onsan To), is sandy along most of its eastern and southern sides (beach area (254)). This sandy coast is fronted by sand flats, except where 2 rocky promontories extend across them to the open water. The southern part of the coast is backed by a narrow strip of grassy lowland while farther north on the east coast the hills rise rather steeply except where 2 slender sand-spits enclose a sand-filled inlet. The west coast of the island and its northern and southern extremities are steep and rocky, and fringed with reefs. This island lies on a shoal which extends a short distance northward and westward.

Oe-do (Oi Yamu), Naep'asu-do (Ampassu To), Oep'asu-do (Tappassu To), Nach'i-do (Nachi To), Tae-so (Tei Nyo), Koa-do (Kouru To), Ulmi-do (Ummi Somu), and Sam-do (Samu Somu; Kwan-do on PLAN 26) are all steep, rocky and largely reef-fringed islets scattered off the west coast of Anmyon-do. Oe-do is connected to the larger island by a shoal. Koa-do lies on a detached shoal. There are a few sandy patches along its otherwise reef-bound coast (beach area (257)). Ulmi-do and the two islets which make up Sam-do (Kwan-do) all lie on a connecting shoal.

(2) Landing beaches.

TABLE IV - 41

LANDING BEACHES OF COASTAL SUBSECTOR 43 L
Reliability FAIR. (PLANS 26 and 27)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(254) Islands near entrance of Ch'onsu-man. (PLAN 26)	Approach channeled; fronted by wide sand or mud flats.	Many short beaches; max. 1 mi.	25 to 50 ft.	1 on 10.	Surf moderate on S, light on N.	Sand; some pebbly stretches.	Backed by slopes of hilly islands.	Trails connect parts of islands; Wonsan-do connects to Anmyon-do by ferry.
(256) W shore of peninsula S of T'aean, and Anmyon-do to S. (PLAN 26)	Partly obstructed by rocks and reefs; fronted by sand flats.	Nearly continuous strip beaches for 22 mi.	25 to 50 ft.	1 on 10.	Surf moderate.	Sand; a few short pebbly strips.	Steep hill slopes of hilly irregular branching island and peninsula.	Narrow road extends down main ridge of peninsula and connects to island by ferry; trails connect most beaches to road.
(257) Koa-do. (PLAN 26)	Generally clear; narrow sand flat.	0.5 mi.; 0.1 mi. beach on W side.	15 to 25 ft.	1 on 10.	Surf moderate.	Sand and pebbles.	Steep slopes of hilly island.	Small town at N end of E beach.
(261) Och'ong-do. (PLAN 27)	Approach channeled; partly obstructed.	0.1 mi.	25 to 50 ft.	1 on 10.	Surf heavy only with S winds; otherwise light.	Sand and pebbles.	Beach lies at head of deep indentation of steep hilly island; steep slopes encircle beach within 200 to 300 ft.	Small town at S end of beach; trail leads over hills to NW end of island.



FIGURE IV - 135. Coastal subsector 43 M.
Beach areas are shown on PLAN 26.

M. Ch'onsu-man (Sajan Kaye) and coast westward.

(36°20'N, 126°30'E, to 36°42'N, 126°07'E)

(PLAN 26; FIGURE IV - 135; U.S.H.O. charts 3238 and 3244)

(1) Coast.

The first three segments of this division are concerned with the eastern and northern shores of Ch'onsu-man (Sajan Kaye). This gulf, long, narrow, and divided into two parts near its head, lies between the mainland and Anmyon-do. The gulf may be entered only through a comparatively narrow channel

at its southern end. The approach from the south is obstructed by numerous islets and shoals lying about the entrance and to the southward (subsector L). On the west side the gulf is enclosed by a long peninsula extending southward from the mainland, and beyond by Anmyon-do (Ammin To). The approaches to the western subdivision of this subsector are obstructed by offshore islets and by a wide shoal which extends some distance off shore. Except at the western extremity of the division, where deep water comes fairly close inshore, the 10-fathom line runs from 5 to 10 miles off shore.

The coast in this subsector is very largely bordered by broad mud flats. There are, however, some sand flats and sand shoals bordering the western part. Sandy shores predominate except in the upper reaches of Ch'onsu-man and the rocky western extremity of the division.

The inland terrain is composed of hills which vary from gentle grassy slopes to steep wooded ranges in the more inland and more western parts. Narrow valleys and occasional small coastal lowlands occur in a few places and these are generally cultivated. The many villages along the coast in this area are connected by a series of secondary roads and trails. The most important towns are Taech'on, Haemi, Sosan and T'aean. An improved road connects all of these towns.

1

The coast in this subdivision is largely broken up by four rather large and many small inlets. The first of these inlets, Taech'on-hang (Poryon Po), lies at the southern end of the subdivision. A broad sand flat fills the greater part of this bay, but mud flats are found at its head and along its northern entrance point. The southern shore of the inlet is largely sandy (beach area (253), TABLE IV - 42) but has a fringe of rock along almost its entire length. The town of Taech'on lies at the head of this inlet on a small river plain. The coasts along the front of this plain are diked and the plain itself cultivated. Another smaller river valley, also cultivated, lies just northward, separated from the first by a spur of hills coming down to the coast. The north shores of the bay head are fringed with rock in many places, and hills come to the water's edge at several headlands. Elsewhere there is a narrow border of cultivated land between the tidal flats and the hills. One low sand spit extends into the flats about the middle of the north shore. The north entrance point of the bay is a reef-fringed island; this island is connected to a point of the mainland by a reef, and encloses a small, very narrow, inlet. The shores of this inlet are largely reef-bound, but there is marsh at its head and a small sandy stretch on the south shore.

A promontory separates this small inlet from the second of the larger ones, known as Majoribanks Harbor. This second inlet is completely filled with mud flats and its coast is almost entirely hilly, with occasional bluffs at the water's edge. Only a few narrow and very small valleys are under cultivation here.

The headland between this and the next inlet is hilly and its coast is rock-fringed, but near its north tip there is a narrow strip of cultivated land. The third inlet extends far inland. Its channel is blocked by a shallow sand bar and farther in is filled with mud flats. The shores of this inlet are fairly steep in places and there are occasional bluffs, but small scattered areas of low cultivated land are protected by dikes. Some reclamation of the flats has been done or is in progress. The main road in the area runs along the shore for a short distance at the head of the inlet; it is protected by an embankment. Between the third and fourth inlets the coast is broken by a series of indentations and promontories in the first half of the distance, and consists of a broad headland along the northern half. This coast is generally fronted by mud flats and some reefs appear in the southern half. There is generally a border of low cultivated land between the hills and the water's edge. Little sand is indicated.

The northernmost inlet of the subdivision is also filled with mud flats, and there is a small islet lying on the flats which partly blocks the entrance. Hills come right to the water's edge around the shores of the inlet, except for a small valley at the head and one or two other smaller stream mouths.

The coast between the last inlet and the end of the subdivision is bordered by a mud flat and there are patches of out-cropping rock near its outer edge. Small, rocky patches also occur at a few points along the shore. The shore is generally sandy (beach area (255)) and is backed by a belt of low, cultivated land from which slopes rise rather gently to steeper hills inland. The small cape which forms the north end of the segment is fringed with reefs.

2

A long, slender peninsula extends southward from the head of Ch'onsu-man (Sajan Kaye), dividing it into two parts. This subdivision comprises the eastern head of the gulf. An open-water channel, with a least depth of 3 fathoms, extends about 4 miles into this arm of the gulf. Elsewhere it is completely filled with tidal mud flats. The shores of the eastern side of this part of the gulf are generally sandy (beach area (255)) and usually backed by gently sloping grassy hills, though occasional bluffs appear just behind this sandy stretch. A few small areas of rice cultivation are found in valleys and are generally protected by dikes. Across the head of the gulf the diking is more common and the shore is more generally backed by cultivated areas, though hills extend to the end of two or three promontories, ending in some places in bluffs. The western shore, which forms the eastern side of the dividing peninsula, is also largely sandy and is backed by rolling hills and occasional low bluffs, with some scattered areas of cultivation. There are some steep hills along the peninsula and a little northward of the middle the slopes of Tobi-san (Teipi San; Chobi-san on PLAN 26) fall rather steeply to the coast. Kanwol-to lies near the edge of the mud flats east-southeastward of the extremity of the beach. Its slopes are grassy. Two long, narrow sand spits extend northward and southwestward from it. There are several other islets scattered between this one and the peninsula. Most of them are low and grassy but two have a partial wood cover.

3

This bay, the western head of Ch'onsu-man (Sajan Kaye), is also largely filled with mud flats. A channel, with depths of 2 fathoms, extends about 4 miles into it. The shores on the east side of this bay are hilly and mostly covered with scrub pine. There are several stretches of sand along the water's edge, particularly near the middle (beach area (255)). These sand stretches are frequently backed by low bluffs. A small amount of diking appears and there are narrow strips of cultivation along the coast. There are two small cultivated valleys at the head of the bay. The western shores of the bay are in general similar to the eastern shores. The wooded hills generally slope to the water's edge with only small patches of cultivation here and there. A few cliffs and bluffs appear at the water's edge. The southern extremity of the peninsula which forms the west side of this bay is composed of a series of long slender arms, between which there are mud-filled inlets. A small islet, lying in the easternmost of these inlets, consists of a low grass-covered plateau, surrounded by bluffs (U.S.H.O. chart

3244). On the two westernmost promontories stretches of sand appear. The southwestern extremity of the peninsula and the two islets lying on a sand flat which extends off it are reef-bound.

4

This subdivision consists of one bight with a mud-filled inlet at its center. The shores of the bight southeast of the inlet are fronted by sand flats and are almost entirely sandy (beach areas (256), TABLE IV - 41 and (258), TABLE IV - 42) except for reef-fringed promontories at each end, and a small out-cropping of reefs at the end of a sand spit about 2 miles from the south end. A low, narrow plain backs this part of the coast with comparatively gentle hill slopes behind. This coastal strip is partly cultivated in rice. The inlet at the head of the bight is filled with mud flats on which many salt pans have been constructed, especially in the coves branching from the inlet. The shores behind the salt pans are frequently diked in order to protect irrigated rice fields behind them. Two long sand spits enclose a small cove just inside the south entrance point of the inlet and two other sand spits near the middle part of the inlet almost meet in its center (beach area (258)). Near the northwestern entrance point of the inlet the shores become somewhat steeper, but two or three small sand or sand and gravel patches appear. The western shore of the bight is rocky with cliffs in places, except around the coves, where there is

low ground, sometimes sandy beaches, and sometimes diked. Two or three steep, rocky islets just off shore are connected to the shore by sandy spits. This stretch of coast is fringed in most places by a narrow sand flat, which is sometimes fronted by reefs. The inland terrain consists, in general, of grassy hills, except for small cultivated low areas around the coves.

5

The peninsula which forms the southeastern end of this subdivision is divided at its end to form a small inlet. The entrance of the inlet is closed by a sand flat and the inner part is filled with mud flats. The hills slope steeply nearly to the water's edge, leaving a narrow cultivated area, partly protected by dikes, and fronted around the head of the inlet by sand (beach area (259)).

The two headlands which form the entrance point of the large bay, comprising the greater part of this segment, are both bordered by cliffs. Around the shores of the bay the hills slope rather gently to the water's edge, in most places, though the more gentle slopes and the few low areas are cultivated. Considerable diking has been done. The inland terrain is composed of rolling, grassy hills, with some coniferous tree cover on the steeper slopes. Salt pans lie along the flats in several minor indentations. Sandy stretches appear near the northwest entrance (beach area (259)).

(2) Landing beaches.

TABLE IV - 42
LANDING BEACHES OF COASTAL SUBSECTOR 43 M
Reliability FAIR. (PLAN 26)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(253) Shore of bay W of Taech'on (Poryon Po).	Obstructed in N; mud and sand flats front beaches.	8 short beaches; average 0.3 mi.	25 to 50 ft.	1 on 10.	Surf moderate with SW winds.	Sand.	Small rice-paddy-covered flats enclosed by hills.	R.R. and secondary road pass through Taech'on at head of bay; beaches connect by trails.
(255) Shore of Ch'onsu-man.	Approach channeled; fronted by wide mud flats.	2 areas of strip beaches, each approx. 5 mi. Also short beaches on small islands.	25 to 50 ft.	1 on 10.	Surf light.	Sand.	Narrow rice-covered flats backed by steep hills or by steep slopes directly.	Trails and narrow roads connect to improved highway several mi. inland.
(258) Vicinity of Namhae-p'o.	E and W beaches obstructed by reefs; N beaches by mud flat.	Several beaches; max. 0.5 mi.	15 to 25 ft.	1 on 10.	Surf moderate.	Sand and pebbles.	Backed by steep hills; in a few places narrow flat intervenes.	Trails connect to narrow roads to T'aean, 3 to 5 mi. to N.
(259) Vicinity of Chiyong-san.	Approach channeled; fronted by wide mud flats.	Several beaches; up to 1.7 mi.	15 to 25 ft.	1 on 15.	Surf light.	Sand.	Backed by steep hill slopes of irregular peninsulas; beaches on SE may be backed by dikes.	Trails and narrow roads wind over hills 5 to 10 mi. inland to T'aean.

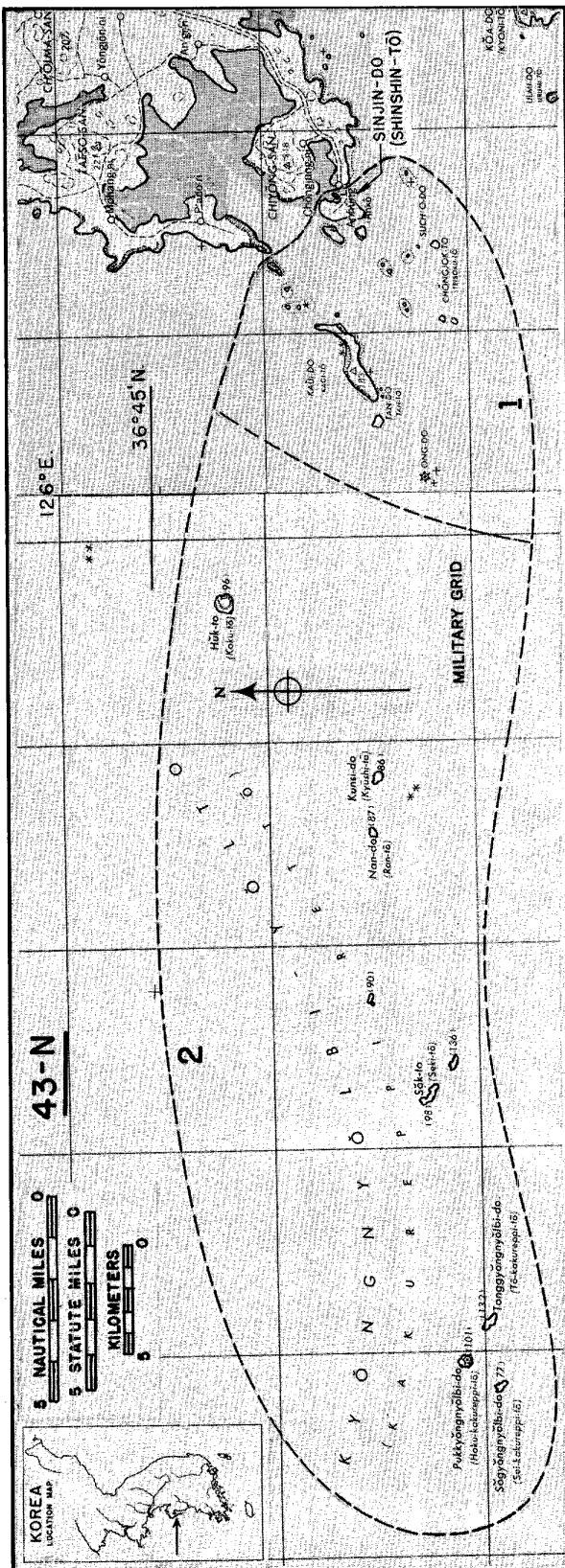


FIGURE IV - 136. Coastal subsector 43 N.
No beach areas described.

N. Islands between $36^{\circ}36'N$ and $36^{\circ}44'N$, and between $125^{\circ}32'E$ and $126^{\circ}09'E$.

(PLANS 26 and 27; FIGURE IV - 136; U.S.H.O. chart 3238)

(1) *Coast.*

These islands lie roughly in a line, extending westward from a point of the mainland for a distance of 30 miles. One group, of which the largest islands are Kuri-do (Kagi To) and Sinjin-do (Mulsan To), lies close off the point of the mainland. The others, all small islets, are strung out over a long distance westward and are known as Kyongnyolbi-yolto (Kakureppi Islands). Their approaches from the west are clear and the outer group of islands lies in deep water. There is shallower water near the inner group, however, and some are connected with the shore by flats and shoals. The coasts of all these islands tend to be rocky and cliff-bound and the islands themselves are high and steep. Some exceptions to this rule are found among the islands near the mainland shore.

1

Sinjin-do (Mulsan To) lies on a shoal extending westward from the mainland and is connected with it by a mud flat. Cliffs occur at many places around the coast of this island and the terrain is high, steep, and grass-covered. The two entrance points to a small bay on the east side are composed of sandy spits. The shores of the bay itself are steep. Sand flats border the western shore of the island where the shore is lower. The island is connected to the mainland and to a small cliffy islet just northwest of it by ferry. Two other islets, both steep, grassy, and cliff-bound, lie off the south and southwest coasts.

Kuri-do (Kagi To) is almost completely bounded by cliffs and steep shores. The southern coast is largely fringed with reefs. A small sandy stretch occurs near the base of a promontory which comprises the northeast extremity of the island. The island rises to a maximum height of 582 feet. Its slopes are largely grass-covered. The other tiny islets in this group are little more than large, above-water rocks. Their sides are steep and those having vegetation of any sort are in general grassy.

2

These islands are all very small and very steep. Huk-to (Koku To), Tonggyongnyolbi-do (Kaori To), and Sok-to (Seki To), the three largest islets, are all steep and cliff-bound. The other islets of the group are little more than rocks. There was a light on Pukkyongnyolbi-do (Muruchii To). Practically all of the islands of this group are steep-to.

(2) *Landing beaches.*

(None described.)

O. From $36^{\circ}42'N$, $126^{\circ}07'E$, to $37^{\circ}04'N$, $126^{\circ}30'E$.

(PLANS 26 and 28; FIGURE IV - 137; U.S.H.O. charts 3237 and 1383)

(1) *Coast.*

The only clear approach to this coast is to the south part of the area. Here the only obstacles under less than 7 fathoms are Huk-to (Koku To) and two small above-water rocks. The islands of Kyongnyolbi-yolto (Kakureppi Islands) extend west by south from the south end of the subsector. The approaches to the northern part of the subsector are obstructed by innumerable islands, rocks, and shoals lying from 8 to 18 miles north-

sand flats. From the second of these stretches, northward to the end of this peninsula, the coast is a series of rocky and reef-fringed projections between which lie small pockets of sandy shore usually backed or interrupted by bluffs. None of this stretch is wooded and the hills are generally grass-covered. The remainder of this subdivision is composed of the shores of a long inlet which is divided by two promontories into three arms. A sand flat lies across the inner part of the entrance to the inlet. Farther in, however, mud takes the place of the sand and the arms of the inlet are largely filled with mud flats. The more southern of the promontories which project into this inlet is hilly and wooded, and has a rather pointed end. The northern has a broad, low extremity and ends in a sandy shore (beach area (260)) backed by low-lying grass lands. There are some sandy shores along the sand flats near the entrance of the inlet but elsewhere the hills slope down to the water and the shore line itself is probably mud. Cultivation is not extensive and is confined to a few very small valleys. A few small villages are situated around the inlet and are connected by tracks. The coast north of the entrance of this inlet is steep and in some places fronted by cliffs. A few small reefs and rocks are scattered along the shoreline. Between the promontories, there are narrow, fringing sand flats and some stretches of sand occur between the cliffs.

2

This subdivision consists of one inlet and its two enclosing promontories. The seaward side of the more southern promontory is largely fronted by cliffs with narrow fringes of reef. There are, however, three stretches of sandy shore fronted by sand flats (beach area (260)). Behind the sandy stretches are some uncultivated valleys and elsewhere the promontory is hilly with a cover of woods and grass. A small islet, lying off the extremity of this promontory, and two others, just off its seaward side, are grass-covered and mostly bounded by cliffs. The west side of the eastern enclosing promontory is rocky along almost its entire length with only a very few small pockets of sand (beach area (262)). Cliffs occur at several places along this shore and reefs fringe almost the whole stretch. A small islet, lying off the north end, is connected to this shore by reefs. There is a shallow sand bar across the entrance to the inlet and the inlet itself is completely filled with mud flats which dry from 4 to 7 feet all the way out to this sand bar. Several small islets are scattered over this flat. They are mostly fringed with reefs though the largest has two small sandy stretches. The western shore of the inlet is largely reef-lined though pockets of sand or sand and gravel are found. Along the eastern shore, sandy stretches are much more frequent though a considerable number of fringing rocks are still found. Salt pans are scattered around the shores of the inlet. A small amount of diking has been done and there is a little rice cultivation in the small, low spots between the hills and the water line.

3

The narrow entrance of this large inlet of Karorim-man (*Karorin-wan*) is bordered on both sides by narrow fringes of reefs at the extremities of the enclosing promontories. Almost the entire inlet is filled with mud flats which dry in places as much as 16 or 17 feet. A channel runs far into this bay but is greatly obstructed by sandy shoals and islets. There is a

shallow anchorage at the head of this channel. The shores of the inlet are uncultivated, rice fields occurring only in a few, small scattered valleys. Generally the hills come right to the water's edge and the shoreline is fringed with rocks extending into the flats. Here and there small patches of sand occur (beach area (262)) and there are salt pans at intervals all about the bay. The islands in the flats are generally rock-fringed. Kop'a-do (*Koba To*), lying in the channel, is an exception, having sandy shores along its entire northern half. There are salt pans on this island and a small village. The two irregular promontories, one forming the northeast entrance of the bay and the other just southward of it, are both made up of two or more hilly portions joined by sandy isthmuses. There are also other sandy stretches in this vicinity interrupted by rocks and reefs.

4

The first stretch of coast in this subdivision is the seaward shore of a peninsula. This stretch is made up of a series of four small bays. All of the promontories are hilly and rock-fringed though on two of them there are some pockets of sand (beach areas (262) and (263)). The two westernmost of these promontories are connected to the rest of the peninsula only by narrow, low and sandy necks. All four of the coves or bays are completely filled in with mud flats which extend to the ends of the promontories and which dry from 2 to 11 feet. There are sand stretches at the heads of the bays and in one there is an area of salt pans. The hinterland is generally hilly and grass-covered though the high hills at the east end of the stretch are wooded. A narrow sand shoal fringes the mud flat on which there is a reef just opposite the fourth promontory. Northward of the third promontory, there is a detached sandy shoal on which lies a rock-bound islet.

The remainder of this subdivision is taken up by a large bay which forms a deep indentation. The inner part of the bay is divided into two separate arms by a long projection of land. The shores of the bay are much indented. Bluffs occur in several places around the shore and the hills generally come very close to the water's edge, leaving only a few small and narrow valleys available for cultivation. Swampy land occurs in several places, notably along the point of the dividing projection of land and along the eastern shore opposite it. Elsewhere the shore is probably composed largely of mud with a few cliffy stretches behind the shore. Little sand is indicated. Many stretches of fringing rock are found all around the bay. Several islands and islets lie on the flats in the bay. The largest, Ch'orak-to (*Soraku To*), lies on the eastern side of the bay and is connected to a point of the mainland by a ferry. This island has some low, wooded hills and a small amount of rice cultivation, but there are also areas of swamp, particularly along the coast. There are salt pans in an inlet on the north side of this island. The shores of the island, like those of the rest of the bay, are largely fringed with rocks but many stretches of sand lie between the rocky points, particularly along the southwest side of the island. Salt pans also occur at intervals all around the shores of the bay. Near the northeast entrance point of the bay, the inner shore of the enclosing promontory has a fairly long stretch of sand (beach area (263))* . Around the extremity of the promontory, however, and extending some distance northward beyond the mud flat, there is a shallow reef.

* U.S.H.O. chart 3237 indicates sand, but 1:50,000 map indicates marsh.

A sand shoal extends westward from the edge of the mud flat off the northeast entrance. Taeranji-do (Dairanshi To) lies on the outer end of this shoal. This island is very irregular in shape. Its two largest inlets on the north and east sides are filled with mud flats. There is a long sand strip at the head of the north inlet and another at the head of a bight on the west side. This western bight is filled in by sand flats and the shoal extends some distance westward beyond the flat. The promon-

ories of the island, as well as some points in the inlet, are fringed with reef. Inland the hills reach a height of 400 feet. There is a small valley on the island. Southward of Taeranji-do, there is a group of several small rocky islands largely surrounded by reefs and mud flats, and drying sand shoals. Some of these shoals are detached by one is a sandy extension of the main mud flat in the bay.

(2) *Landing beaches.*

TABLE IV - 43

LANDING BEACHES OF COASTAL SUBSECTOR 43 O
Reliability FAIR. (PLANS 26 and 28)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(260) Vicinity of Chonggok-tu. (PLAN 26)	Numerous obstructions; sand flats front beaches.	Many beaches; up to 3 mi.	50 to 75 ft.	1 on 10.	Surf heavy.	Sand and pebbles.	Narrow sandy flats, encircled by hills; sand dunes back beach S of Moryong-ch'oe.	Network of trails leads inland from fingerlike headlands over hills to Tae'an 7 to 11 mi. inland.
(262) Vicinity of Karorim-man. (PLANS 26 and 28)	Approaches channeled; beaches fronted by extensive mud flats.	Many short beaches; max. 1 mi.	15 to 25 ft.	1 on 10.	Surf generally light; moderate to heavy on outer ends of peninsulas.	Sand and pebbles.	Beaches line shore of hilly, extremely irregular peninsulas; steep slopes back beaches directly.	Network of trails run out to fingers of peninsulas; main communication lines far inland.
(263) Taeranji-do and bay to SE. (PLANS 26 and 28)	Approaches channeled; beaches fronted by wide sand or mud flats.	Several beaches; max. 1 mi.	15 to 25 ft.	1 on 10.	Surf generally light; heavy on Taeranji-do.	Sand and pebbles.	Beaches line shore of hilly island and hilly irregular peninsulas.	Network of trails run together on axis of peninsula and lead inland; major communications far inland.



FIGURE IV - 138. Coastal subsector 43 P.
Beach areas are shown on PLANS 26 and 28.

P. From 37°04'N, 126°30'E, to 37°15'N, 126°40'E; and off-lying islands.

(PLANS 26 and 28; FIGURE IV - 138; U.S.H.O. charts 2449 and 3237)

(1) Coast.

This subsector consists of a deep bay called Asan-man and a few off-lying islands. The approaches to the bay are obstructed

to seaward by a large group of off-lying islands and numerous small detached shoals. There is a deep-water approach from the west-southwest through Tong-sudo (Higashi Suido). The entrance to the bay itself is obstructed by several sand banks on some of which there are small islets. The shores of the bay are fronted by mud flats and most of the small inlets around its shores are completely filled with drying mud. The group of islands lying off the northeast entrance point of the bay are also

surrounded by mud flats which are separated from the mainland and from each other only by very narrow channels of open water.

The coast in this subsector varies greatly. There are very few sandy stretches and few cliffs; but marshy shores, dikes, and hills sloping steeply to the water's edge all occur about the bay.

The inland terrain is composed of rolling hills of a moderate height, and grass covers some of the more gentle slopes. The steeper slopes are mostly wooded and the narrow valleys and small low areas near the water's edge are planted in irrigated rice.

1

The southwestern side of the entrance of the bay is fringed with reefs for about 1,500 yards east of the entrance point. A reef also extends northward for about 1½ miles from the point. For a short distance east of these reefs the shore is alternately sandy (beach area (267), TABLE IV-44) and rocky, but a little further southeastward it becomes marshy. This marshy land continues around the edges of two large indentations in this shore. There is considerable cultivation in small, low patches here, particularly in the valley of the stream which empties into the bay north of Tangjin (*Tōshin*), the first of the two large indentations. Elsewhere the hills generally fall fairly steeply to the edge of the marshy ground. At the head of the bay there are three other comparatively large stream valleys which are cultivated (PLAN 26). There are numerous salt pans along the southeastern extremity of the bay. The northeast shore of the bay (beach area (268)) is less marshy than the south shore. The hills fall steeply to the water's edge, except at the mouths of numerous small valleys. The shores fronting these valleys are often protected by dikes, and irrigated rice is cultivated behind them. Salt pans also are found along this shore. Toward the northeast end of the bay the dike-protected, cultivated areas are much more frequent than in any other part of the bay.

Several islets are scattered about the bay and they differ somewhat as to both coastline and topography. Ipp'a-do (Rippa To), in the entrance has 2 strips of beach (beach area (264)). The group of three islets, largest of which is Kukhwa-do (Kikka To), lying near the northwest entrance point, is completely bounded by rocks. Chebu-do (Saifu To), lying near the northeast entrance point, has two long sand spits and gener-

ally sandy shores (beach area (268)). There is rice cultivation on it. Several other islets, lying nearer the head of the bay, have marshy coasts and are grass-covered. There are many small villages scattered all about the bay and the town of Tangjin (*Tōshin*) lies a short distance inland from the south shore. The towns and villages are connected by a network of secondary roads and tracks.

Asan-myōji (*Gazan-byōchi*; Gazan anchorage on U.S.H.O. chart 2449), is near the head of Asan-man (Chapter VI, 64).

2

The two largest of the islands lying off the northeast entrance point of the bay are extremely irregular in shape, being composed of innumerable rocky peninsulas and long narrow indentations. Both these islands lie on extensive mud flats, as do the smaller islets in the group. The flat on which Taebu-do (*Daifu-tō*) and most of the smaller islets lie, is connected with that extending off shore from the mainland, the separating channel drying from 3 to 8 feet at low water. The mud flat surrounding Yonghung-do (*Reikō-tō*) is separated from that of Taebu-do by a channel less than ½ mile wide. Taebu-do is very hilly and its slopes are generally grass-covered, though there are a few patches of scrub pine. Cliffs occur at many places around its shores, particularly along the ends of the promontories off which there are often rocky fringes and reefs. Narrow valleys along the coast and in the hills are cultivated and those on the coast are usually protected to the water's edge by dikes. Some of the outer arms of the island are really islets connected only by a low sand isthmus or by a built-up causeway. A comparatively long sandy stretch is found on the northeast side of the island and there are smaller sandy stretches at intervals all around the coast (beach area (269)). Chon-do, Son'gam-do (Senkan To), Chebu-do (Saifu To) and Sonjae-do also have considerable stretches of sandy shore. All the islets, however, have fringes of rocks and reefs around most of their shores.

Yonghung-do has many stretches of sand along its coast (beach area (270)), but they are almost all encumbered by reefs and offshore rocks. Two sandy stretches, one in a cove at the south part of the islet and one on the east side, are exceptions. Hills on this island rise to 512 feet. The two valleys, one on the east side, one on the northwest, have considerable rice cultivation. Most of these islands and islets are inhabited and there are several villages on the larger ones.

(2) Landing beaches.

TABLE IV - 44

LANDING BEACHES OF COASTAL SUBSECTOR 43 P
Reliability FAIR. (PLANS 26 and 28)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(264) Taejak-to, Sungbong-do, Ipp'a-do, and neighboring islands. (PLAN 28)	Fronted by wide drying flats; many beaches obstructed.	Many short beaches; max. 0.4 mi.	15 to 25 ft.	1 on 10.	Surf moderate.	Sand and pebbles; probably scattered boulders.	Hilly islands; beaches line small indentations in steep shore.	A few trails connect parts of islands.
(267) Songmun-gak to N shore of Punhyang-man. (PLANS 26 and 28)	Approach channeled; beaches fronted by wide mud flats.	Strip beaches; max. 1.6 mi.	10 to 20 ft.	1 on 20.	Surf light.	Sand, pebbles, and mud.	Irregular hilly peninsulas; areas shown in rice on plan probably reclaimed land.	Trails lead inland over hills.
(268) Chebu-do and shore of Namyang-man. (PLAN 28)	Approaches channeled; beaches fronted by wide mud flats.	8 beaches; max. 1.4 mi.	15 to 25 ft.	1 on 10.	Surf light.	Sand, pebbles, and mud.	Hills, or small diked flats in rice enclosed by hills; Chebu-do is low but hilly.	Trails lead inland to narrow roads; main road and R.R. 15 to 20 mi. inland.
(269) Taebu-do and neighboring small islands; N shore of mainland peninsula to E. (PLAN 28)	Fronted by wide mud flats; numerous dangers near shore.	Many short beaches; average 0.5 mi.	25 to 50 ft.	1 on 10.	Surf light, but breaks in wide belt.	Sand, pebbles, and mud.	Small rice-covered flats enclosed by hills; dikes may directly back many beaches.	Close network of trails on Taebu-do; narrow road 2 mi. S of mainland beaches leads 20 mi. inland to main road and R.R.
(270) Yonghung-do. (PLAN 28)	Fronted by wide mud flats; numerous dangers near shore.	Short curved beaches; average 0.5 mi.	15 to 25 ft.	1 on 10.	Surf moderate on SW and NW, elsewhere light.	Sand, pebbles, and mud; scattered boulders.	Small steep valleys, terraced in rice, enclosed by hills rising to 300 to 400 ft.	Trails; ferry connects to island group to E.

Q. Tokchok-kundo (Tokuseki Island Group).

(36°57'N, 125°47'E, to 37°20'N, 126°17'E)

(PLANS 27 to 29; FIGURE IV - 139; U.S.H.O. charts 1383 and 3237)

(1) Coast.

The islands of this archipelago are surrounded by tidal mud and sand flats. The approach from the west is obstructed by shoals under depths of 5 to 10 fathoms. Many shoals and sand banks lie among the islands and between them and the mainland. Two channels cut through the archipelago; the Tong-sudo (Higashi Suido) and So-sudo (Nishi Suido).

All the islands are hilly and some are quite rugged, descending, in places, in bluffs and cliffs. Short stretches of sandy shore are found on most of the islands, but the coasts are generally fronted by reefs. There are numerous offshore rocks and reefs.

The hills are sparsely covered with coniferous trees; the valleys are cultivated in irrigated rice.

1

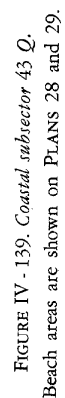
Taeryong-do (Dairei To), Kadok-to (Gatoku To) and Moktok-to (Mokutoku To) are all represented much larger on PLAN 27 than they are on U.S.H.O. chart 3237. They are little more than high rocks (140, 255, and 197 feet in elevation respectively), lying near the end of a shoal under 6 to 10 fathoms which extends southwestward from the other islands of this group. Taeryong-do is composed of two small rocks lying close together just off the north edge of the shoal. Kadok-to is composed of a very small islet and several off-lying

rocks lying on the shoal, and Moktok-to is a single rocky islet just off the south edge.

Kurop-to (Kutsugyo To), the northernmost island of this segment, is fringed on both sides of its northern end by small sand shoals (beach area (265), TABLE IV - 45). A long, narrow shoal under 1 to 3 fathoms, extends northward from a point a short distance off the west coast. The coast of the island is steep, with frequent cliffs at or near the water's edge. There is a sandy stretch just southwestward of the easternmost promontory.

Paega-do (Hakuga To) is also very steep and largely bounded by cliffs and bluffs, some of which rise from the water's edge, while others are a short distance behind the coastline. The indentation on the southeast side is filled with mud flats and its shore is somewhat less precipitous than elsewhere (beach area (265)). Two or three small islets lie about 1½ miles southeastward. The largest of these are Pol-to and O-do (Changyomu To). These are considerably smaller than indicated on PLAN 29. Several rocks lie between them and Paega-do.

Wi-do (I To) is high and its coasts are generally steep. Its northern extremity is fringed with cliffs. A large indentation on the north coast is filled by a tidal mud flat and this flat is fronted by a sand shoal (beach area (265)). Small rocks appear both in the flat and on the shoal, and a chain of large above-water rocks, shown as two islets on PLAN 28, extends northward from the eastern extremity of the island.



Chi-do is a grass-covered island reaching an elevation of 370 feet. The northeast and south promontories are cliff-lined, and the coasts are steep-to.

Son'gap-to (Senko To) is a very steep island which reaches a height of 1,173 feet. The water on the north side and off a west coast inlet is shoal, but elsewhere the coast is steep-to. Except for the small inlet on the west coast, the entire island is lined by cliffs. The inlet is entirely filled with mud flats and has a tiny beach at its head (beach area (265)).

Kakhul-to (Kakkuri) is a steep, cliff-lined islet which reaches a height of 474 feet.

Ka-do (Kae To) is another rugged cliff-lined islet with an elevation of 237 feet.

2

Mun'gap-to (Bunko To) is a steep, rugged island reaching a conspicuous summit of 920 feet. There is a small beach on the north side of the eastern promontory and another at the head of the inlet on the east coast (beach area (265)). There is shoal water of about 1½ fathoms extending off the south shore. One mile west of the island is a sand bank which dries in places and extends about 4½ miles north-south. A deep, narrow channel runs between it and the island. To the northeast there is another shallow bank in the middle of which is Muk-to (Bayly Island) which reaches a height of 242 feet.

Sonmi-do (Akken To) is a steep islet reaching a height of 718 feet. The southwest coast is cliff-lined. The coasts are steep-to, but there is a shallow sand bank off the east coast.

Tokchok-to (Tokuseki To) is the largest island in this division and reaches a height of 1,017 feet. The island is bordered on the west and southwest by deep water close to the shore, but shoals and banks lie off shore. On the south is a sand shoal surrounding Muk-to (Bayly Island). On the southeast is a narrow channel beyond which is Soya-do (Soya To). The northeast shore is bounded by tidal mud flats, beyond which a sand shoal extends northeastward to the mud flats of the Marie Fortune Archipelago close off the mainland. The island is rugged and precipitous. The west shore and the northwest promontory are very steep. The largest inlet on the southwest coast is filled with tidal mud flats; at its head is a small beach (beach area (266)). The small inlet on the southwest coast likewise has a beach at its head. The inlet on the east coast is filled with tidal mud flats and has a beach at its head. The northeast coast is lined by rocks.

Soya-do (Soya To) is another rugged island reaching a maximum elevation of 512 feet (U.S.H.O. chart 1383). It is almost entirely reef-bound. A half-mile-long reef extends northeastward from the center of the east coast. The northeast and southwest coasts are surrounded by tidal mud flats. North of the island is a broad sand shoal. To the west is a narrow channel separating Soya-do from Tokchok-to (Tokuseki To). The water reaches a depth of 25 fathoms within ½ mile of the southeast shore in the So-sudo (Nishi Suido). There are three small beaches on the island (beach area (266)). One lies on the northeast coast a half mile southeastward of the north end of the island, the second likewise lies on the east coast 1 mile north of the south end of the island, and the third lies on the southwest coast 1¼ miles north of the south end of the island. Other smaller sand stretches appear on the southwest and

southeast coasts. A sand spit, on which there is a village, extends westward toward Tokchok-to.

3

The northernmost of the main islands of this group, Taeijak-to (Chikuisaku To), consists of two steep peaks, the highest of which reaches a height of 512 feet. The slopes leading to its mostly reef-bound shores are steep. What appears on PLAN 28 as a northward extending promontory on the west coast, is shown on the U.S.H.O. charts as an islet lying close off shore and connected to Taeijak-to by a mud flat. There is a sand shoal to the south of the island, and a narrow sand shoal and sand bars north of the island. There is a narrow mud flat along the east coast. A small beach borders the head of the bay north of the southeast promontory of Taeijak-to (beach area (264), TABLE IV - 44). Sand beaches also may line the heads of the two small inlets on the south coast.

Taeijak-to is separated from Soijak-to (Isaku To) by a narrow channel about 7 fathoms deep. This latter island is steep and precipitous, with several peaks, the highest reaching slightly over 600 feet. The northeast and south coasts are mostly bordered by a narrow mud flat beyond which is a sand shoal. Two inlets on the north coast are likewise filled with tidal mud flats. Most of the northeast and some of the south coasts are reef-bound. A broad sand shoal separated from the island by a narrow channel 10 fathoms deep lies off the southwest coast. The island has several beaches (beach area (264)).

Sasungbong-do (Sha To; Sasunghwang-do on PLAN 28) is a tiny, rugged islet which reaches a height of 231 feet. It is mostly surrounded by reefs. The islet lies at the east end of a large, partly drying, sandbank. The 10-fathom line lies within ½ mile of parts of the north and east coasts.

Sanggonggyong-do (Daikyokyo To) is a rugged rockbound islet 222 feet high, south of which is a smaller, unnamed island. Both lie on the edge of a shallow sand bank. The 10-fathom line lies within a few hundred yards of the north and east coasts of Sanggonggyong-do.

P'i-do (Fu To) is a small rock surrounded by deep water.

Sungbong-do (Shoho To) is a hilly island reaching a maximum height of 329 feet. There is a broad sand shoal lying off the north coast and a narrow sand shoal lying off the south coast. The north and south coasts are surrounded by narrow tidal mud flats. Alternate areas of sand flats and reefs fringe the shores (beach area (264)). The 10-fathom line lies within ¼ mile of the east coast, ½ mile of the south coast, and 1½ miles of the north coast.

4

The Soji group (U.S.H.O. chart 1383) consists of two small islands and an islet lying in the middle of the sand shoal which connects Tokchok-to (Tokuseki To) with the mud flats off the mainland. The northern island, Taechochi-do, lies on the north edge of the shoal, and, on the north side, the 5-fathom line lies immediately off shore. Reefs surround the island. The southern island, Sochochi-do, which reaches a height of 163 feet, is surrounded on all but its south point by the sand shoal. The south point is lined with reefs. Waters exceeding 10 fathoms lie within ⅛ mile of the shore.

Chawol-to (*Shigetsu-tō*; Shokotsu on U.S.H.O. chart 1383) is a rugged, precipitous island reaching a maximum height of

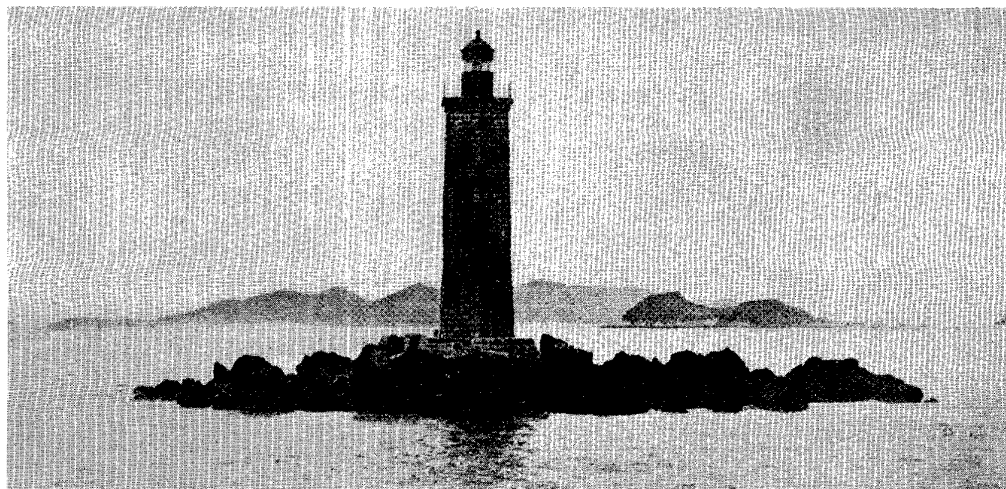


FIGURE IV - 140. West coast. Haku Gan Light.

Looking west-northwestward. Saddlelike island to right of lighthouse is a small unnamed island immediately west of Soobok (*Shoobatsu-tō*; Soobol on PLAN 28; Shigetsu To on U.S.H.O. chart 1383). Large island mass in background is Chawol-to (*Shigetsu-tō*; Shokotsu on U.S.H.O. chart 1383). From approximate position 37°13'53"N, 126°24'30"E: U.S.H.O. chart 1383.

558 feet (FIGURE IV - 140). Broad sand shoals and sand bars lie off the north and south coasts. There is a narrow sand shoal lying off the west coast along which the 10-fathom line lies within $\frac{3}{4}$ mile of the shore. The under-water gradient on the east coast is precipitous and the 10-fathom line lies within $\frac{1}{4}$ mile of the shore. Except for the east and northeast coasts the entire island is surrounded by a tidal mud flat. The promontories are fringed by reefs. A chain of reefs and above-water rocks extends westward from the northernmost promontory. There are beaches between all the promontories (beach area (271), TABLE IV - 45). The slopes are especially steep on the east coast. Narrow coastal plains lie behind most of the beaches.

Three small precipitous islets (Laguerre Islands) lie south of Chawol-to (Shokotsu on U.S.H.O. chart 1383). The westernmost of these, Hwang-do reaches a height of 127 feet. This island is surrounded by a narrow shoal and by bare rocks. The center island, Nam-do, reaches a height of 131 feet and likewise is surrounded by a shoal. The easternmost island, Pu-do (O-do on PLAN 28) lies on a sand shoal and is surrounded by reefs. Soobok (*Shoobatsu-tō*; Soobol on PLAN 28; Shigetsu To on U.S.H.O. chart 1383) lies on a long sand shoal east-southeast of Chawol-to and has a narrow mud flat on its north shore. It is surrounded by reefs, and there is deep water off the east and west ends of the island.

(2) Landing beaches.

TABLE IV - 45

LANDING BEACHES OF COASTAL SUBSECTOR 43 Q Reliability FAIR. (PLANS 27 to 29)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(265) Tokchok-kundo. (PLANS 28 and 29)	Fronted by drying flats; many beaches obstructed.	Many pocket beaches; max. 0.5 mi.	15 to 25 ft.	1 on 10.	Surf moderate.	Sand and pebbles.	Steep hilly islands; beaches line small coves in generally cliffed shore.	Trails only.
(266) Tokchok-to and Soya-do. (PLAN 28)	Fronted by drying flats; generally obstructed or approach channeled.	Pocket beaches; max. 0.5 mi.	25 to 50 ft.	1 on 10.	Surf moderate.	Sand and pebbles.	Narrow steep valleys in mountainous islands; Tokchok-to rises over 1,000 ft.	Trails skirt shore; islands connected by ferry; several small villages in coves.
(271) Chawol-to. (PLAN 28)	Fronted by mud flats; many reefs and scattered rocks near shore.	Many short beaches; average 0.3 mi.	15 to 25 ft.	1 on 5.	Surf moderate on N, light on S.	Sand and pebbles; scattered boulders.	Small short steep valleys rising abruptly to 500-ft. hills.	Trail skirts S shore; crosses island E of center.

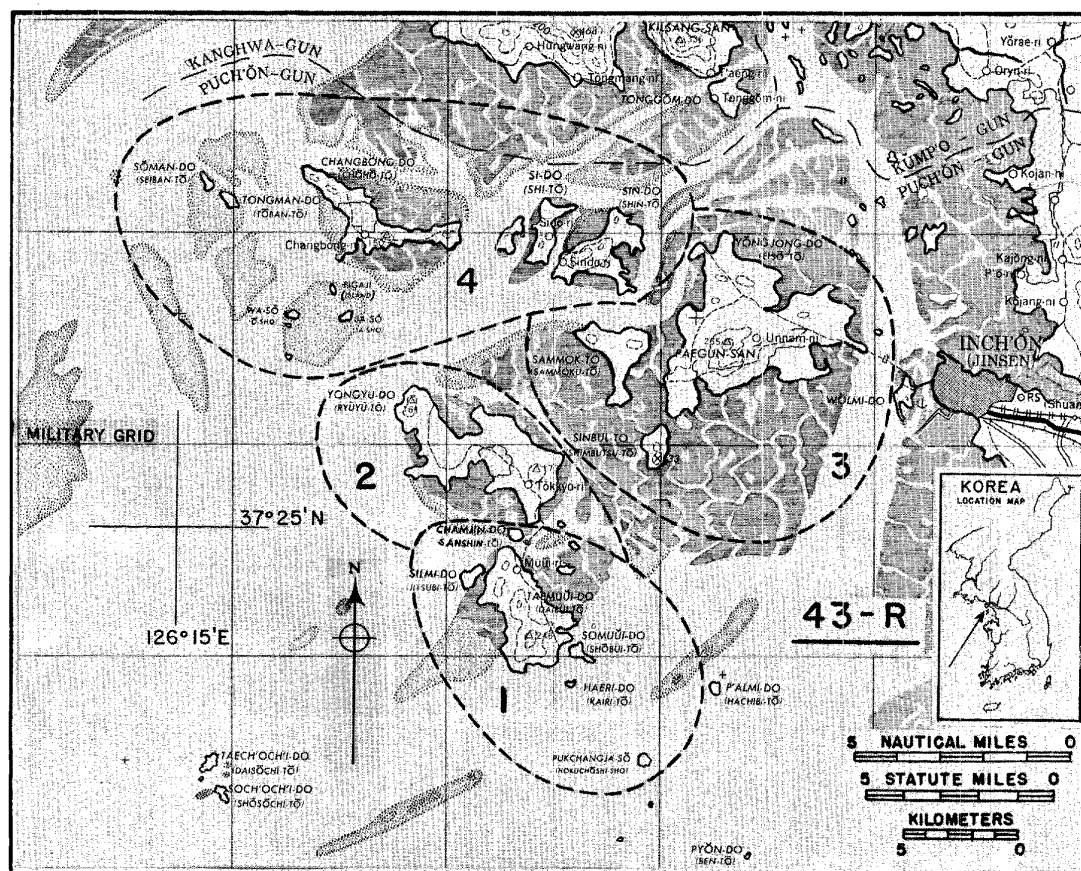


FIGURE IV - 141. Coastal subsector 43 R.
Beach areas are shown on PLAN 28.

R. Marie Fortunee Archipelago.

(37°30'N, 126°30'E)

(PLAN 28; FIGURE IV - 141; U.S.H.O. charts 1383 and 3237)

(1) Coast.

The approaches to this archipelago are encumbered by the islands and shoals of the Tokchok-kundo (Tokuseki Island Group) to the southwest, and the shoals and sand flats of the western estuary of the Han-gang to the west. The islands lie on a group of broad mud flats about 1½ miles off the peninsula on which stands the city of Inch'on (Jinsen). Between the islands and the mainland is the shallow and difficult main channel leading to the port city of Inch'on (Chapters VI and VIII), and through the eastern estuary of the Han-gang (Kankō) to Kyongsong (Keijō, Seoul) (Chapter VIII). To the west of these islands and separating them from Changbong-do (Choho To), also described in this subdivision, is Changbong-sudo (Choho Suido). Sin-do (Felicie Island) and Si-do lie in this channel.

Reefs, sandy stretches, cliffs, dikes, and salt pans are found around the shores of these islands. Except for promontories of the outer islands, the coasts are generally fronted by mud flats. The inland terrain of the islands is generally steep and hilly, though some more gentle slopes, small coastal lowlands, and valleys are found. The hill slopes are generally grassy

though there are some growths of scrub pine. The lower cultivated areas are planted in irrigated rice.

1

Haeri-do (Philip Island) is a small reef-surrounded islet, 130 feet high. Somuui-do (Shobui To) lies in a broad sand shoal. The island has a tidal mud flat on the east coast and a reef fringe on two western promontories.

Taemuui-do (Daibui To) is a steep island reaching a maximum elevation of 800 feet. Most of the coast is surrounded by reefs. Except for the south coast, the island lies entirely within a broad tidal mud flat. There are a few beaches (beach area (272), TABLE IV - 46). A small unnamed, rugged island, 163 feet high and reef-bound, lies east of Taemuui-do. Another rugged island, Silmi-do, 158 feet high, lies to the west. The hills of this island descend steeply to the coasts which are surrounded by reefs and off-lying rocks except for a sandy stretch on the east side.

Chamjin-do is a small, precipitous, and reef-bound island 169 feet high. The north shore is bordered by a tidal mud flat and the remainder of the coast by a sand flat.

2

Yongyu-do (Ryuyu To) is a hilly island reaching a maximum height of 564 feet near the east end. Except for the north-western promontory the entire island is surrounded by tidal

mud flats. On the southwest these are fronted by a drying sand flat. The northwestern promontory is lined by reefs and off-lying rocks and backed by precipitous hills which descend to the coast in steep slopes. The western inlet on the southwestern coast is nearly blocked by a sandspit. This inlet is backed by a narrow coastal plain behind which are steep hills. The head of the inlet in the middle of the south coast is also nearly blocked by a sandspit. It is backed by rolling hills, except for a coastal plain on the east side. The easternmost bight of the south coast consists of a long, sandy stretch (beach area (272)). This beach is backed by a narrow coastal plain behind which are steep hills. The rest of the coast consists of sandy shores broken, especially around the promontories, by reef-fringed stretches. There is generally a narrow coastal strip between the hills and the water's edge. Rice is grown at the head of the inlet on the center of the south coast.

3

Sinbul-to (Shimbutsu To) is a steep island reaching a height of 427 feet, which lies in the midst of broad tidal mud flats. The southeast and southwest coasts, as well as a small patch on the east coast, are lined by reefs. There is a small beach near the center of the east coast and one near the center of the west coast (beach area (272)). The north coast is bordered by a narrow coastal plain. On the remainder of the island the hills descend steeply to the shore.

Sammok-to (Sammoku To) is surrounded, except at its northwest point, by tidal mud flats. A 4½-fathom channel comes within ¼ mile of this point, which is steep and reef-bound. The west central coast of the island fronts a rolling coastal plain backed by low hills. The south promontory is hilly; its east and west points are fringed with reefs. A coastal plain extends halfway up the east coast to a hilly rock-lined promontory. The northern and northeastern coasts consist of hills, and the northeast promontory is fringed with reefs. There is a sandy stretch near the west end of the bight on the north coast (beach area (272)).

Yongjong-do (Yeiso To) is the largest island in the group. The highest point, near the southwest end of the island, is Paegun-san (Hakuun Zan), 846 feet high. Except for the easternmost promontory, where reefs reach across the flat to the canalized estuary of the Yom-ha (Yen Ga), the island is completely surrounded by mud flats. There is probably a small stretch of sandy beach on the southeast point of the island. Small patches of reef are found along a few of the promontories. The inland terrain consists mostly of rolling hills. The hills reach the coast in some places, particularly on the promontories, but narrow coastal strips of low ground are found at the heads of indentations and along the south coast. These strips, and two large valleys and a few smaller ones, are cultivated. There are salt pans along the western part of the south coast.

4

The easternmost of the islands of this subdivision, Sin-do (Felicie Island) is surrounded by tidal mud flats on the east, north, and south, and by sand flats on the west. The island is hilly and the slopes on the coast are steep. Si-do is surrounded by narrow tidal mud flats, which are separated from the sand flat west of Sin-do by a narrow, shallow channel. The island consists of rolling hills reaching 355 feet in elevation. The slopes of the coast are gentle to steep. There is a small, unnamed island 312 feet high immediately to the west. The largest island of this subdivision, Changbong-do (Choho To) is surrounded by tidal mud flats, except at its northwest point and along the southwest coast. The southwest coast is bordered by tidal sand flats. The coasts are steep and the island is hilly, reaching an elevation of 518 feet. There is some rice cultivation near the center of the island. Sa-so, Pigaji, Wa-so, Tongman-do, and Soman-do are tiny islets lying on sand flats. All of them are high and steep, reaching elevations of 146 to 286 feet.

(2) Landing beaches.

TABLE IV - 46
LANDING BEACHES OF COASTAL SUBSECTOR 43 R
Reliability FAIR. (PLAN 28)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(272) Sammok-to, Yongyu-do, Sinbul-to, and Taemuui-do.	Fronted by mud flats.	Many beaches; max. 1.2 mi., average 0.4 mi.	25 to 50 ft.	1 on 10.	Surf moderate on S and W shores, light on N and E.	Sand; firm on S and W, soft on N and E.	Beaches front small flats backed by hills.	Trails skirt shores of islands in most places.



FIGURE IV - 142. Coastal subsector 43 S.
Beach areas are shown on PLAN 28.

S. Imperatrice Gulf.

(37°15'N, 126°40'E to 37°28'N, 126°42'E)

(PLAN 28; FIGURE IV - 142; U.S.H.O. charts V3-34, 3237, 2449, and 1383)

(1) Coast.

This division comprises the shores of Imperatrice Gulf and the promontory which bounds it on the north. The coast and inlets within the gulf have been subdivided and considered separately for convenience of description.

The approaches to this gulf are encumbered by numerous shoals and islands. Channels leading to it through the off-lying archipelago are narrow and difficult. The whole gulf is filled with broad tidal mud flats except for a shallow channel. Along the promontories the hills generally slope steeply down to the water's edge, but around the heads of the inlets there are some cultivated valleys, generally fronted by dikes. Few cliffs or sandy stretches are indicated.

The coastal plains and narrow valleys are cultivated in irrigated rice. The hills generally have a sparse cover of coniferous trees, including scrub pine.

1

The tidal mud flat fronting this subdivision of the coast is about 2 miles wide. From the western end of the subdivision to the base of a small blunt promontory, a mile northeastward, the coast is generally steep. Cliffs are found at the beginning and at about the middle of this stretch. There is a small marsh at the base of the promontory, backed by a small alluvial plain which is cultivated in rice. Both the northeast and southwest sides of the promontory are composed of cliffs, but there is a small plain at its end backed by gentle slopes (beach area (269), TABLE IV - 44).

From the end of the cliffs on the north side of the promontory the coast continues steep to the entrance point of a small inlet near the east end of the subdivision. A small cultivated plain partly diked backs the shores of this inlet, and there are salt pans at its head. The promontory which forms the east end of the subdivision is high, and the hills slope steeply to the water.

2

This subdivision consists of a long inlet entirely filled with mud flats. Along the shores there are several small groups of

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COASTS AND LANDING BEACHES

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(2) Landing beaches.

TABLE IV - 47

LANDING BEACHES OF COASTAL SUBSECTOR 43 S
Reliability FAIR. (PLAN 28)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(273) Shore S of Inch'on (Jinsen). (FIG. IV - 143)	Fronted by wide mud flats; approach channeled.	Several short curved beaches; max. 0.5 mi.	15 to 25 ft.	1 on 15.	Surf light.	Sand and mud.	Small cultivated valleys in hills.	Trail skirts shore to im- portant port of Inch'on (Jinsen) and highway and R.R.



FIGURE IV - 147. Coastal subsector 43 T.
Beach areas are shown on PLAN 28.

T. From $37^{\circ}29'N$, $126^{\circ}37'E$, to $37^{\circ}53'N$, $126^{\circ}23'E$.
(PLAN 28; FIGURE IV - 147; U.S.H.O. chart 3237).

(1) Coast.

This subsector of the coast is fronted along the first 20 miles by a narrow channel, the Yom-ha canal (Yen Ga canal), which is the southern outlet for the Han-gang (Kan-kō). The last few miles of this stretch is fronted by the channel which is the northern outlet of the Han-gang. The southern

channel is very narrow and winds between islets, rocks, and sand shoals. The large island of Kanghwa-do (Kanguhwaa To) and several islets lie immediately off this stretch. The northern channel is shallow and much obstructed by sand bars, mud flats, and islands. The approaches to these channels are 2 estuaries, both of which are shallow and much obstructed.

The coast of this subsector is generally low, is sandy in some places, and almost entirely diked. The low areas are interrupted

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COASTS AND LANDING BEACHES

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by short, rocky stretches in several places and by one stretch of cliffs. Low rounded hills rise on several of the smaller promontories. The rocky stretches are backed by rather abruptly rising hills. The coast along the northern part of the division is cut by the channels of several large rivers.

The low areas are generally planted in irrigated rice as are the valleys between the hills which back this coast. The hill slopes are uncultivated and there are groves of deciduous trees, and of scrub pine and other coniferous trees.

1

This subdivision is entirely fronted by tidal mud flats on which there are patches of sand and marsh. The coast is almost entirely diked or backed by dikes except where hills rise immediately from the water's edge. Several stretches of this coast are sandy, and a beach area extends southward from its northern end (beach area (274), TABLE IV-48). Several groups of salt pans lie along the southern extremity of this stretch. The cultivated areas consist entirely of irrigated rice. There are two marshy reed-covered areas about midway along this stretch which are also fronted and backed by dikes. In many places, there are dikes behind the sandy stretches. The hills are uncultivated and are covered with deciduous and coniferous trees.

The coasts of the several small hilly islets which lie on the tidal flats fronting this subdivision are partly sandy. Some of them are diked and cultivated but they are generally covered with scrub pine and grass. An airplane landing ground known as Fuhei is reported to be $4\frac{1}{4}$ miles northeast of Inch'on (Jinsen), about 1 mile east of the coast, and an army airfield,

Kimpo airfield, is reported at Kump'o (Kimpo), about 15 miles west-northwest of Kyongsong (Keijō, Seoul) (Chapter XIV).

2

This coast is fronted by the one-half-mile-wide channel which is the southern outlet for the Han-gang (Kan-kō). It is almost entirely filled by shoals, above-water and below-water rocks, cliffy islands, and fringing sand flats. The coast is low and generally diked, but there are several rocky and sandy stretches (beach area (274)). Hills rise almost immediately from the coast, particularly behind the rocky stretches. The small, low coastal areas and the valleys in this subdivision are cultivated in irrigated rice, and the hills are covered with deciduous trees, and with scrub pine and other coniferous trees.

3

This coast fronts the northern channel of the Han-gang (Kan-kō) and is fringed, generally, by tidal mud or sand flats. The coast is low and for the most part composed of sandy stretches interrupted by low, sloping hills, except for a short cliffy stretch about the middle. A small, hilly promontory west of these cliffs rises to a height of about 330 feet. The coast is cut by several rivers and is almost entirely diked to protect the low areas in the rear which are extensively cultivated in irrigated rice, especially along the valleys of the rivers and between the hills which back the low areas. The hills are sparsely covered with scrub pine and other coniferous trees.

(2) Landing beaches.

TABLE IV - 48

LANDING BEACHES OF COASTAL SUBSECTOR 43 T
Reliability FAIR. (PLAN 28)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(274) N and S entrances of Yom-ha canal. (PLAN 25)	Approaches channeled; fronted by wide sand and mud flats.	Several beaches; up to 2 mi.	15 to 25 ft.	1 on 20.	Surf light.	Sand.	Beaches backed by hills or dikes.	Main road and R.R. 20 mi. or more away, reached by network of trails and narrow roads over rolling hills; canal crossed by fer- ries at many places.

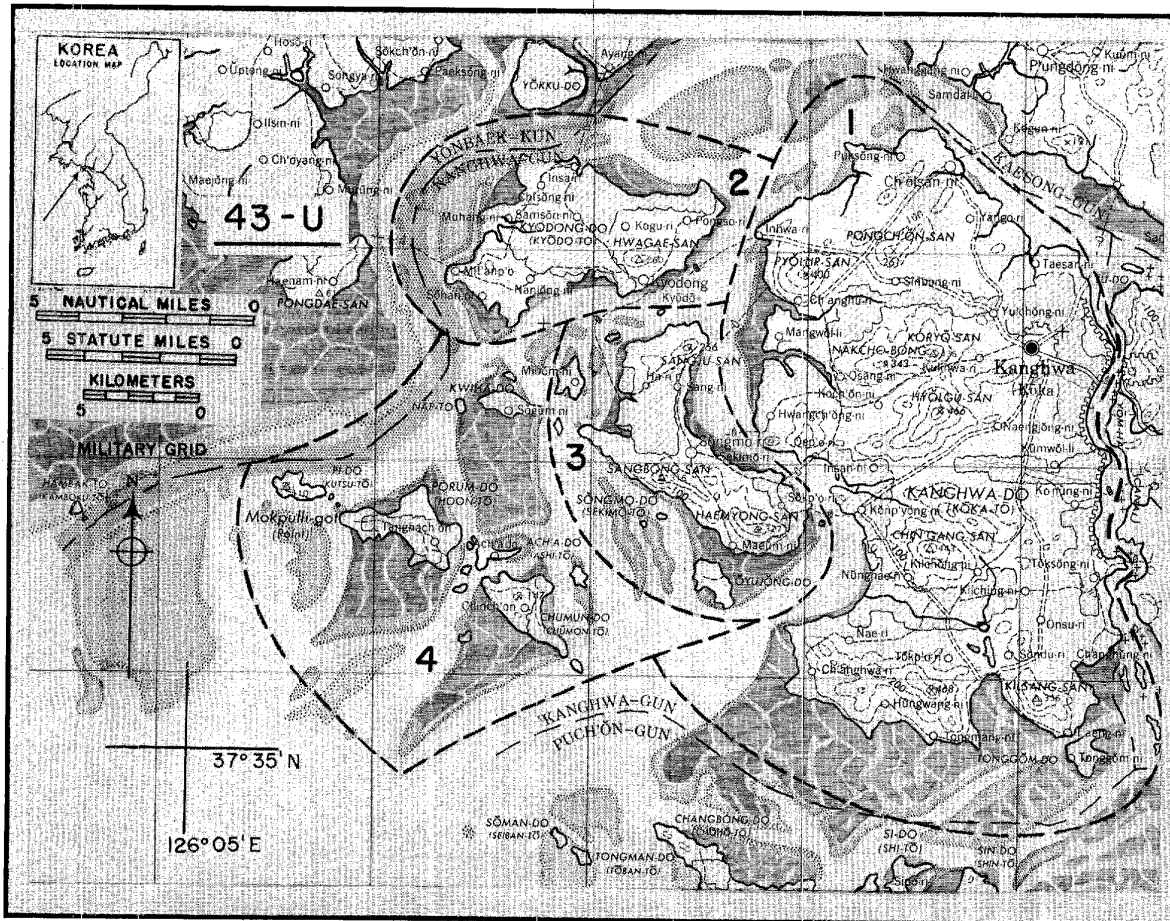


FIGURE IV - 148. Coastal subsector 43 U.
Beach areas are shown on PLAN 28.

U. Kanghwa-do (Kanguhaa To) and other islands between $37^{\circ}33'N$ and $37^{\circ}50'N$, and between $126^{\circ}07'E$ and $126^{\circ}34'E$.

(PLAN 28; FIGURE IV - 148; U.S.H.O. chart 3237)

(1) Coast.

This group of islands is separated from the mainland on the north, east, and northwest by narrow channels. Islands within the group are separated from each other by narrow channels between extensive mud and sand flats, small islets, and rocks. The approaches to the group are encumbered by numerous shoals and drying and above-water patches of sand.

The coasts and terrain of the islands are varied. Dikes, sand, and mud shorelines are common, and the terrain varies from gently sloping to extremely steep wooded hills. Cultivated valleys are found on all the islands.

1

The south coast of the largest island, Kanghwa-do (Kanguhaa To) is fronted by a tidal mud flat which extends about $3\frac{1}{2}$ miles southward, and is fringed by tidal sand flats. There are tidal mud or sand flats in some places along the west and north coasts of the island, but none appear off the east coast which fronts the canalized Yom-ha (Yen Ga), only $\frac{1}{2}$ mile wide.

The east coast is low, and in places is sandy (beach area (274), TABLE IV - 48). A road runs parallel to the coast only a few yards from the water's edge. It is protected by dikes or fills along a large part of its length, particularly at several places where there are irrigated rice fields immediately inland. Low hills rise from the tips of several of the promontories along this stretch, some of which have a narrow fringe of reefs. Behind the low areas the hills rise abruptly, reaching their summit in the middle of the island at 1,518 feet. Along the southeast coast there is a group of salt pans. Low areas, generally cultivated in irrigated rice, extend inland along the valleys of the streams between the hills which back the coast.

Except for two or three places where the hills reach the water's edge the north coast is largely bordered by a narrow cultivated strip which widens in places and extends inland along valleys. There are dikes near the northeast corner of the island. Some marsh is present along the shore westward of the northernmost extremity, and a sandy stretch closely backed by hills lies just eastward of the rocky northwest corner.

The west coast of Kanghwa-do is fronted generally by narrow tidal mud or sand flats. The greater part of the coast is low, and there are many stretches of dikes along it. The low areas are cultivated in irrigated rice, and are interrupted in many places by hilly promontories which rise abruptly from the

water's edge, and reach heights of 1,440 feet on Chin'gang-san (Baron Peak) behind the southwestern part of the coast.

Along the south coast, hills rise to heights of 1,554 feet close behind the water's edge. They are fronted by a very narrow coastal area of irrigated rice, or by grasslands. This coast is almost entirely diked. The hills which back the coast around the island are mostly grassy, but some cover of deciduous trees, and of scrub pine and other coniferous trees appears. Tonggom-do (Sampan Island), lying off the south-eastern tip, reaches an elevation of 437 feet. It lies on a mud flat which extends southwestward and is fringed by tidal sand flats. The coast is sandy and diked in places, and the hills behind it are covered with deciduous trees, and scrub pine and other conifers.

2

Kyodong-do (Kyodon To) is fronted by tidal mud flats which are fringed in places by tidal sand flats. It is generally low, and is diked along the northeastern and eastern portions. The island is almost entirely cultivated in irrigated rice except for the hilly areas. These hills reach heights of over 800 feet at Hwagae San and are covered with scrub pine. There is also a hilly promontory on the northwestern tip of the island which is covered with coniferous trees. Grassy hills rise behind the low coastal area on the southwest coast to heights of 425 feet.

3

Songmo-do (Meioumu To) is almost entirely fronted by tidal sand and mud flats. This island is almost all hilly, except for a low partly cultivated area extending from the east to the west side of the island, just south of the steep northern end, and two small cultivated areas at the south and east extremities.

Minor roads raised on fills run along both ends of the large northern plain. The hills that reach heights of 1,000 feet behind the southern coast are covered with coniferous trees and some deciduous trees. Several small hilly, grassy islets lie off Songmo-do (Meioumu To). The largest of these is Oyujong Do which reaches heights of 249 feet. Its coast is diked along the east side, with areas of irrigated rice behind these dikes. The coast of the rest of the island is composed mainly of short, cliffy stretches. The hills are partly covered with scrub pine.

4

The three largest islands in this group are surrounded by tidal mud flats which are fringed by tidal sand flats. The north coast of Kwiha-do is diked and cultivated. The coast of the rest of the island consists of cliffs and steep slopes. Several small, hilly, uncultivated islets and rocks lie off shore.

Pi-do (Kuchomu To) is a hilly island reaching a height of 210 feet. It is surrounded by tidal mud flats except at its promontories, which are reef-bound. The hills are covered with scrub pine and grass.

Porum-do (Poromu To) is generally low, but along the north shore there are short, cliffy stretches. Most of the island is cultivated in irrigated rice, but the hills of the promontories are tree-covered. Of the several small islets lying southeastward of Porum-do, Ach'a-do is the highest, reaching heights of 167 feet. It is surrounded by a tidal sand flat.

Chumun-do (Chubun To) is surrounded by tidal mud flats which are fringed by tidal sand flats. The entire east coast is cultivated in irrigated rice but the rest of the island is hilly, hills reaching a summit of 467 feet.

(2) *Landing beaches.*

(TABLE IV - 48)

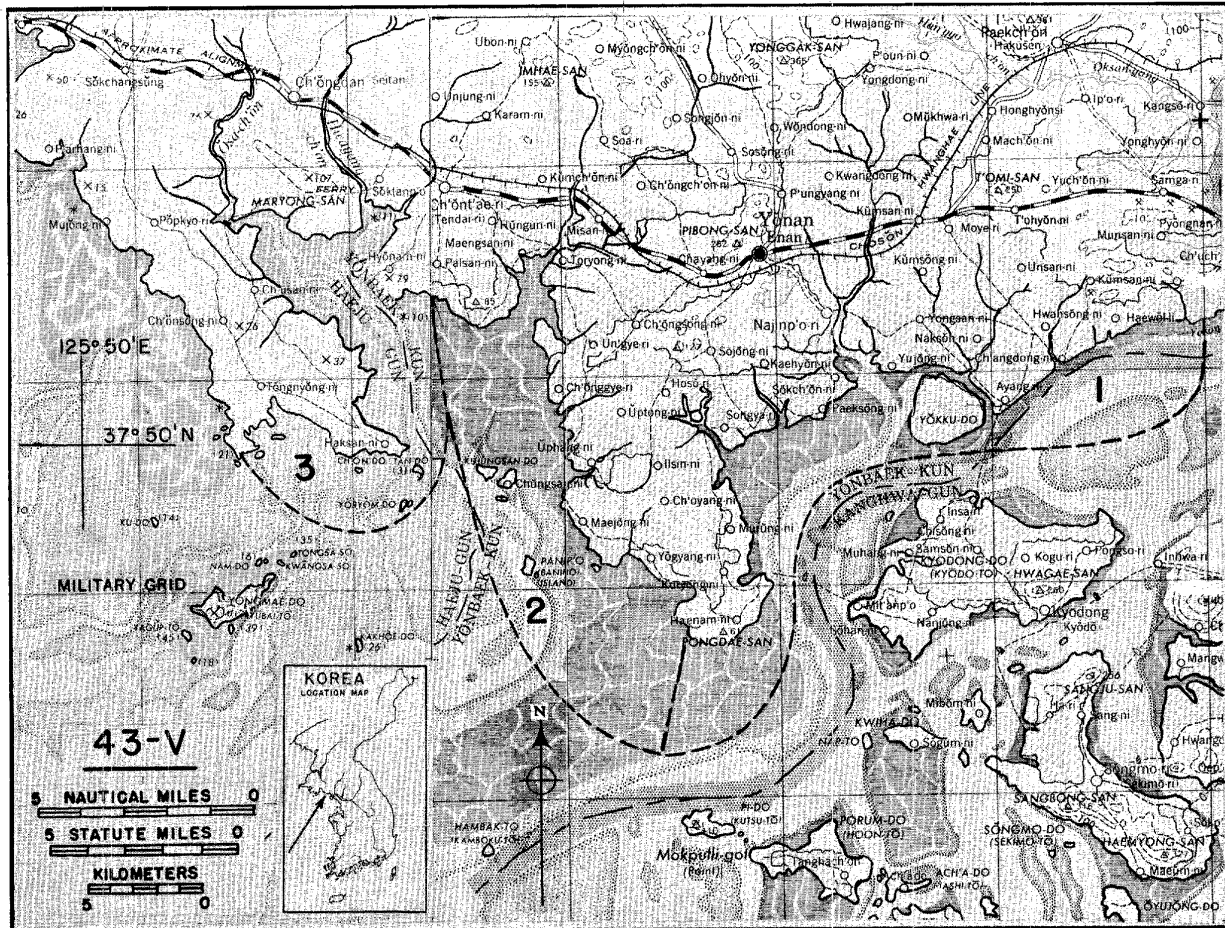


FIGURE IV - 149. Coastal subsector 43 V.
No beach areas described.

V. From $37^{\circ}53'N$, $126^{\circ}24'E$, to $37^{\circ}50'N$, $125^{\circ}55'E$.
(PLANS 28 and 29; FIGURE IV - 149; U.S.H.O. chart 3237)

(1) Coast.

This subsector is entirely fronted by tidal mud or sand flats which are traversed by several channels. In many places the channels are less than 1 fathom deep. The coast is low and is protected by dikes in many places. There are also a few short stretches of bluffs close behind the shore. Low gently rolling hills are found near the water's edge along most of the coast of the largest peninsula in this subsector.

Irrigated rice is found immediately behind most of this coast, and these cultivated areas extend for more than 5 miles inland along subdivision 1. Irrigated rice is planted in the valleys of the hills which back the low coastal areas and along the stream valleys. The hill slopes have a partial cover of deciduous trees, and of scrub pine and other conifers.

1

The tidal flats are fringed in general by a narrow band of sand flats, except along the northeast end of this subdivision. The small island Yokku-do is not shown on U.S.H.O. chart 3237 and is probably composed of land reclaimed from the mud flat. It is surrounded by tidal mud flats and is entirely cultivated in irrigated rice. The coast is diked along the eastern part of this subdivision, along a short portion about

midway, and also for about $\frac{3}{4}$ mile at the southwestern end. From the eastern end of the subdivision to the eastern side of the base of the large peninsula, the coast is low, and traversed by many streams. The entire east coast of the peninsula consists of low, gentle slopes. Hills come nearer the water's edge at the extremity of the peninsula. Rice cultivation is found along the entire subdivision and generally extends inland for a distance of several miles except for the easternmost $2\frac{1}{4}$ miles. Here the cultivated area is backed about $\frac{1}{2}$ mile inland by more abruptly rising hills. There is no tree cover on the slopes of these hills, but the gentle slopes along the southwestern end of the area are sparsely covered with coniferous trees.

2

This subdivision is fronted by tidal mud flats which are fringed by tidal sand flats. Four small hilly uncultivated islands lie off this stretch on the tidal sand flats. This coast is for the most part low and is diked in many places along the southwest tip of the peninsula and also at the mouths of the several streams. There is a short stretch of cliffs along the northwest coast of the peninsula. This entire coastal area is cultivated in irrigated rice, except for small hilly areas immediately back of the coast along the southwest tip of the peninsula. The irrigated areas extend inland along the stream valleys and along the low hills which rise behind the coastal area. These gentle slopes have small patches of trees on them.



FIGURE IV - 145. *West coast, Inch'on (Jinsen).*
Looking west-southwestward across town and harbor toward Wolmi-do (*Getsubi-tō*) right, and Shō Getsubi To, small island at left, from approximate position $37^{\circ}28'18''\text{N}$, $126^{\circ}37'30''\text{E}$; U.S.H.O. chart 2449.

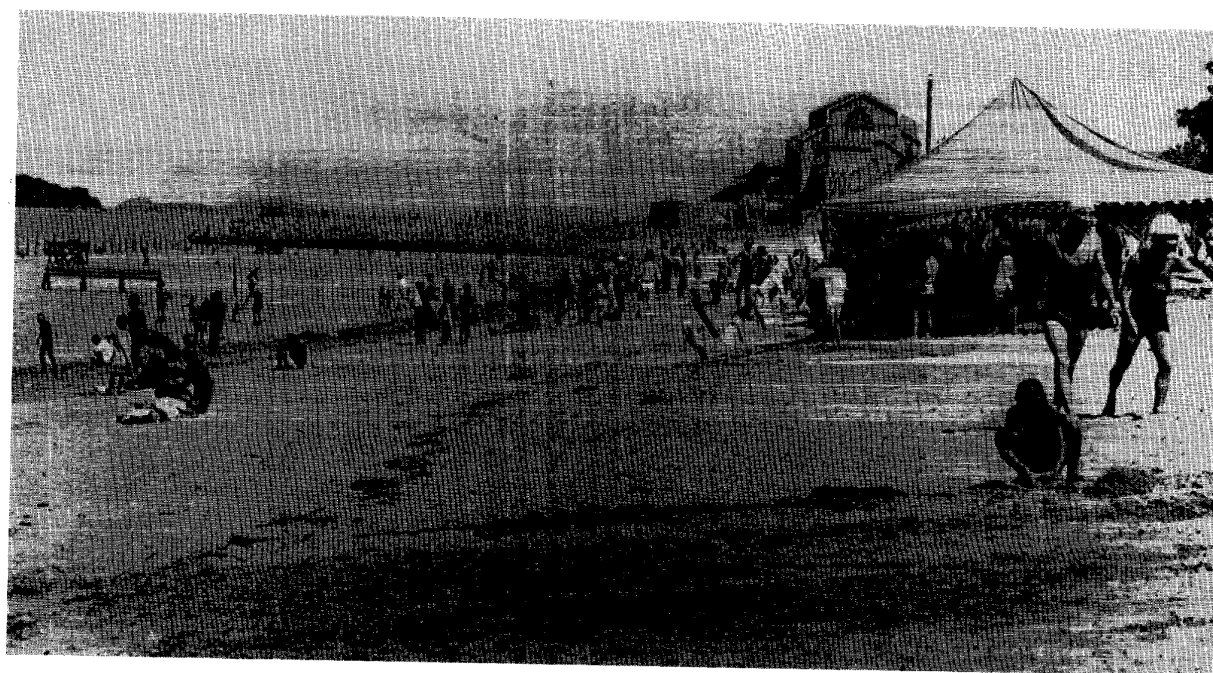


FIGURE IV - 146. *West coast, Inch'on (Jinsen).*
Bathing beach on Wolmi-do (*Getsubi-tō*), direction unknown. Approximate position $37^{\circ}28'\text{N}$, $126^{\circ}36'\text{E}$; U.S.H.O. chart 1383.

salt pans. A coastal plain about one mile wide, and protected by dikes, lies at the head of the inlet. There are also several other small dike-protected alluvial plains along the shores of the inlet. Between these the hills slope steeply to the water's edge. These plains are generally cultivated.

3

The greatest part of this subdivision consists of two inlets which together form the head of Imperatrice Gulf. The shores of the southern of these inlets are almost completely diked. Four streams empty into the head of the inlet and their valleys are cultivated for some distance inland. Elsewhere there is only a narrow fringe of cultivated ground between the shoreline and the hills. A small islet near the center of the inlet is connected to the plain on the northern shore by a causeway. The extremity of the promontory separating the two inlets is high and steep.

The shores of the northern inlet are much steeper, and diking and cultivation is much less general. There are, however, three fairly large valleys which are fronted by dikes and cultivated in rice.

From the western entrance point of the northern inlet to the western end of the subdivision the hills slope steeply to the shore leaving only a few small valleys which have been diked and cultivated.

4

The shores of this subdivision are generally steep and only at a few places along the southern half is there any cultivation. The coasts of few valleys which are cultivated are diked. The island of Oi-do (Grivel Island) lies on the mud flats off the middle of this subdivision. It is hilly and its coast is generally steep except for a small sandy stretch at the north end and a small diked plain on the east side. Between the island and the mainland, dikes have been built, and most of the area is used for salt pans. The salt pan area is partly enclosed on the north side by Okku-do (Alexander Island; Okkwi-do on PLAN 28), which is a precipitous islet nearly 300 feet high. The coast northward of these salt pans is very steep and cliffs occur near the end of the subdivision.

5

This coast comprises two small inlets completely filled with mud flats. There are numerous detached rocks in the north inlet. The south and east shores of the southern inlet front a narrow, dike-protected, cultivated plain backed by rolling hills. On the north shore of the inlet the plain narrows considerably

and only the western half of this shore is protected by dikes. The shores of the north inlet also front a narrow plain, which widens somewhat at the north end of the inlet where a stream empties into it. The plain is interrupted in two or three places by hills extending to the shoreline.

6

The flats in this inlet are divided by dikes into a series of plots used as salt pans; these are connected to the mainland by earthenwork causeways. The shore of the inlet fronts a series of dike-protected coastal plains backed by low, rolling hills and interrupted by occasional spurs of the hills. At the northern part of the inlet the coastal plain is about 1/2 mile wide. A stream crosses this plain and empties into the head of the inlet.

7

The coast in the southern and central parts of this subdivision is very steep and cultivation is limited to a few narrow strips and one or two small valleys. The promontory near the middle is steep and reef-fringed. At the head of the bight just northward of this promontory is an area of marshy ground, partly diked, behind which is a small cultivated valley. A triangle of land, having one point of its base on a small rounded promontory and the other at the north end of this subdivision, has been reclaimed from the flats. The apex of the triangle is a small unnamed islet. This reclaimed land is protected by dikes.

8

This subdivision comprises largely the major port and city of Inch'on (*Jinsen*) (Chapter VI, 61; Chapter VIII) which occupies the end of a promontory. The north shore of the promontory, between the city limits and the entrance of the small inlet at its base, is very steep. The inlet is almost entirely filled with salt pans. Behind the salt pans, rolling hills rise from the coastline and the more gentle slopes and valleys are cultivated. There are sand and mud beaches along the shore south of Inch'on (beach area (273), TABLE IV - 47) and a bathing beach on Wolmi-do (Getsubi To) off the tip of the Inch'on peninsula (FIGURES IV - 143 to IV - 146). From Inch'on a primary road and a standard-gauge railroad extend inland about 20 miles to Kyongsong (*Keijō*, Seoul), the major transportation hub of Korea (Chapter VII). At Kyongsong are two airfields, Keijō and Keijō/Eitōhō; Keijō South, a reported field, is believed to be about 15 1/2 miles south of Kyongsong (Chapter XIV).

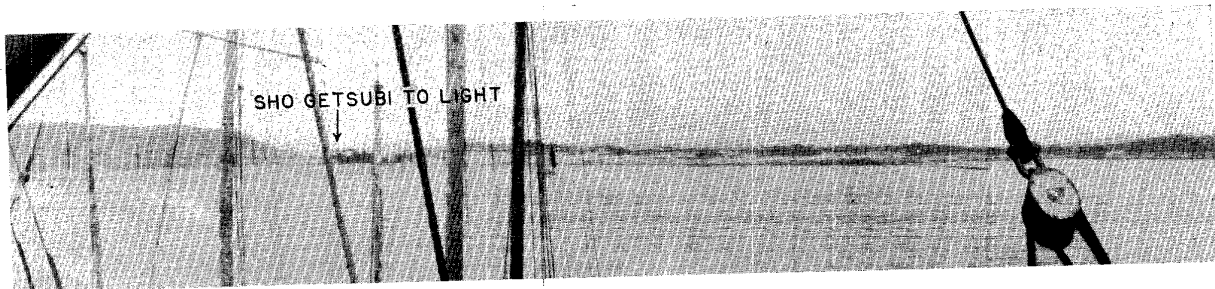


FIGURE IV - 144. West coast, Inch'on (*Jinsen*).

Panorama from Wolmi-do (*Getsubi-tō*) at left, to shore south-southeast of Inch'on, at right. Looking east-northeastward from approximately 1 nautical mile southwest of Sho Getsubi To Light. Before 1932. Approximate position 37°27'N, 126°35'E; U.S.H.O. chart 1383.

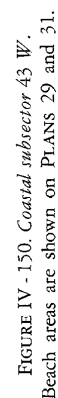
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FIGURE IV-115
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CONFIDENTIAL



FIGURE IV-115. West coast, Indon. Beach area. (A) 115.
Northern part of beach area, part of city of Indon at left. Beaches are fringed by wide mud flats crossed by stream channels.
A.A.F. 00000/00000, dated 29 December 1971.

Approved For Release 2006/09/25 : CIA-RDP79-01144A000900010004-8



This subsector consists of the coast of the deeply indented Haeju-man (Haiju Bay) which extends about 20 miles northward and is much encumbered by shoals and several islands. The shores of the bay are fronted by drying tidal sand and mud

flats. Flats are less extensive on the west side of the bay than on the east side or at the head. Between these flats extending from the shores there are many shoals and underwater and drying banks through which there are two channels. To the north the two channels unite, and the channel depth near the head of the bay is from $3\frac{1}{2}$ to 5 fathoms. The Yonp'yong-yolto (Yonpyon Islands) lie southward of the mouth of the bay. Several small islets and rocks lie in the mouth of the bay.

The coast of the southeastern portion of the bay is generally low, but is backed a short distance inland by hills. The coastal area around the bayhead is also generally low and sandy and is diked in several places. Along the western shore of the bay coastal hills rise from the water's edge.

The terrain immediately inland of this bay area, as well as the valleys between the hills which back the coast, is generally planted in irrigated rice. The hills are covered mainly with scrub pine and other coniferous trees. There are some deciduous trees on the hills backing the western part of the bay.

1

The southern part of this subdivision is composed of a narrow coastal plain, which is interrupted toward the north by hills which, in some places, rise almost immediately from the water's edge. It is fronted entirely by tidal mud flats which are fringed by tidal sand flats. The coastal area and the valleys are cultivated in irrigated rice, and the hill slopes are covered with some scrub pine and other coniferous trees. The eastern entrance point of Haeju-man (Haiju Bay) is shown as a promontory on U.S.H.O. chart 3237 and PLAN 29, but on the Japanese 1:50,000 map it appears to be composed of one island and several small islets which are low and uncultivated. Along the western coast of a small promontory which projects from the northern portion of the subdivision there are two beaches (beach area (275), TABLE IV - 49); the northern one is about $1\frac{1}{2}$ miles long.

2

The bayhead of Haeju-man (Haiju Bay) is fronted by tidal mud flats which are fringed on their seaward side by tidal sand flats. The extreme northwestern end of the gulf is almost entirely cut off by two slender, rocky promontories which extend from the north and south coasts; a ferry connects the two. The coast is, for the most part, composed of sand (beach area (276)) but is broken about midway along the stretch by a low, cliffy area which rises directly from the water's edge. There are only a few other small cliffy areas in this stretch. Much of the bayhead is diked and the coastal area as well as the valleys are cultivated in irrigated rice. The low hills which in many places rise close behind the water's edge are covered with

deciduous trees, and with some scrub pine and other coniferous trees. Farther inland the hills rise more abruptly but are covered with the same type of vegetation. Several small uncultivated islets and rocks lie off shore in the bayhead.

3

This stretch forms the western shore of Haeju-man (Haiju Bay) and is almost entirely fronted by tidal mud and sand flats. A promontory about 1 mile southward of the northern point of this subdivision is fringed by reefs which are fronted by sand. Another promontory, the end of which is about 1 mile southward of this one, is fronted by sand flats; and along its westernmost shore there is a small beach area (beach area (277)). These promontories are hilly, and in most places rise almost immediately from the water's edge. Irrigated rice is found in the low areas and narrow valleys along the more southerly portion of this stretch. The hills, as well as some of the coastal area, are covered with scrub pine and other coniferous trees as well as deciduous trees. A few hilly, uncultivated islets and several rocks lie southward of the southern entrance point to the bay.

4

Yonp'yong-yolto (Yonpyon Islands), lying southward of Haeju-man (Haiju Bay) consist of two small islands with a few islets and rocks around them. The northern island, Taeyonp'yong-do (Teyonpyon To) is the larger, reaching an elevation of 422 feet, and presents a level appearance. It is almost entirely surrounded by shoals to a distance of about 2 miles. Its eastern shore is cliffy in places and is almost entirely fronted by a tidal mud flat. The northern end of the west coast is also cliffy and is backed by a hill 422 feet high. The island has several short beaches (beach area (278)). Reefs extend some distance off the southeast extremity. There are many offshore rocks and islets near them.

The southern island, Soyonp'yong-do (Shoyonpyon To), has a conical summit 710 feet high and is almost entirely cliffy. It is surrounded by a sand shoal.

Yongmae-do (Yogumai To) is a cliffy island entirely surrounded by mud flats and fringed by tidal sand flats; it rises to an elevation of about 330 feet. Several small islets surround this island, none of them exceeding 45 feet in height.

Taesuap-to (Daisuio To), 279 feet in height, and Sosuap-to (Shosui To), 133 feet in height, lie in the mouth of the bay and rise from a shoal which extends southwestward from the drying bank to the northeastward. Several tiny islets lie off these two islands.

Confidential

COASTS AND LANDING BEACHES

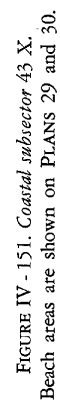
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(2) Landing beaches.

TABLE IV - 49

LANDING BEACHES OF COASTAL SUBSECTOR 43 W
Reliability FAIR. (PLANS 29 and 31)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(275) Shore SE of Yongdangp'o. (PLAN 29)	Approach channeled; fronted by mud flats.	Interrupted strip beach; 2.7 mi.	15 to 25 ft.	1 on 10.	Surf moderate.	Sand and pebbles.	Backed directly by low rolling hills.	R.R. and improved road run 1 mi. NE of N end of beach; city of Haeju 7 mi. NW.
(276) Head of Haeju- man. (PLAN 31)	Approach channeled; fronted by wide mud flats.	Strip beaches; average 1 mi.	15 to 25 ft.	1 on 10.	Surf light.	Sand and mud.	Backed by small flats or low hills; beach of Yul- tong-ni fronts low rice- terraced slope 1 mi. wide.	R.R. and improved road to city of Haeju every- where within 2 mi. over low hills and rice-covered flats.
(277) W shore of Haeju-man. (PLAN 29)	Approach channeled; fronted by wide sand flat.	2.1 mi.	25 to 50 ft.	1 on 10.	Surf moderate.	Firm sand.	Beach fronts narrow lowland strip covered with rice fields, backed by low rolling hills.	Trail skirts shore, connect- ing with net of trails which lead over rolling hills and cultivated flats to road and R.R. 8 mi. to NW.
(278) Yonp'yong- yolto (Yonp- yon Islands). (PLAN 29)	Generally obstructed by nearshore rocks; sand flat on SE side of Taeyonp'yong- do.	Short beaches; max. 0.5 mi.	25 to 50 ft.	1 on 10.	Surf heavy with SW quadrant winds.	Sand and pebbles.	Narrow steep valleys of rough islands.	Trails back beaches; small town on SE shore of Tae- yonp'yong-do.



X. From 37°46'N, 125°36'E to 37°55'N, 124°59'E.

(PLANS 29 and 30; FIGURE IV - 151; U.S.H.O. chart 3237)

(1) Coast.

The only deep and relatively clear approach to this subsector is from the southwest, and even this approach is obstructed near the coast by drying rocks, a few small islets, and a shallow sand shoal. The approach from the west is obstructed by the islands of the Taech'ong-kundo (Daisei Group on U.S.H.O. chart 3237) and many shoals and rocks. Southward, a broad shoal under depths of 5 to 10 fathoms extends westward roughly parallel to the coast. Nearer shore there are many shoals and banks, as well as off-lying rocks and small islets.

The shoreline itself is varied. The hills extend close to the coast in many places; they end in cliffs at some localities, and at others have narrow stretches of low ground between them and the shore. Stretches of sand, some of which are extensive, are located along the coast. Mud flats front much of the coast, particularly in the inlets; many of them are fringed with narrow sand flats. Along other parts of the coast, sand flats extend from the shore.

The coast is generally backed by hills, most of which are low and rolling, but which in some places rise quite steeply to elevations of 500 to 1,000 feet. Some of the hill slopes are grassy, but they are more commonly covered with coniferous trees. The lower coastal areas and some valleys extending inland are generally cultivated in irrigated rice.

Subdivisions 4, 5, 6, 7, and 8 deal with the shores of a large and irregular bay.

1

The easternmost 7 miles of this subdivision is indented by 2 bays filled with drying mud flats; the remainder of the coast is fronted by tidal sand flats. Two sand bars lie 1¾ miles west-southwest of the east end, about 1½ miles off shore. The 5-fathom line averages 1½ miles off shore, and the 10-fathom line about 2 miles off shore. There are 3 sandy stretches in the subdivision; 2 of them, comparatively short, are at the heads of slight indentations near the east end. The third sandy stretch (beach area (279), TABLE IV - 50), is 2¾ miles long; its western end is 3½ miles northeast of Tungsan-got (*Tosan-kan*), the western end of the subdivision. This beach fronts a low sandy spit which is less than ½ mile wide. The remainder of the coast is in general low, except for the headlands. Tungsan-got is the extremity of a rugged, cliff-lined promontory. The entire subdivision is backed by rolling to precipitous hills which reach elevations of 700 feet.

The hills are covered by scrub pine and other coniferous trees. The small coastal plains and a few small valleys are cultivated in irrigated rice.

2

The southernmost 4 miles of this subdivision is bordered by narrow tidal sand flats; the remainder, including the small cove near the north end, is fronted by tidal mud flats. A sand bar, about 2 miles wide, lies 2 miles west of the south end of the subdivision in the center of the channel between the mainland and Sunwi-do (*Juni-tō*).

One mile north of Tungsan-got is a beach (beach area (280)), which is 1¾ miles long. Northwest of the beach is

a 1-mile stretch of low cliffs rising from the water. Between Tungsan-got and Sunwi-do is Sunwido-myōji (*Juni To Anchorage* on U.S.H.O. chart 3237), about 5 miles wide at its widest point. North from Tungsan-got, the anchorage gradually narrows to about ¾ mile wide. The east shore of this anchorage is for the most part backed closely by precipitous to rolling hills, which reach elevations of about 700 feet.

3

This subdivision includes 4 islands. The southernmost island is Sunwi-do (*Juni-tō*), 7½ miles long and about 1½ miles wide. The southeastern side of the island forms the west shore of Sunwido-myōji (*Juni To Anchorage*). The northwest coast of the island is cut by a large inlet, filled with drying mud flats, which separates the island into 2 sections connected by a narrow isthmus about ¼ mile wide; the coast is thereby naturally divided into 4 parts. The southeast part of the coast and a small stretch of the northeast part are fringed by narrow reefs. The remainder of the northeast part, except the northern extremity, is bordered by a narrow tidal sand flat. The northwest coast is bordered by tidal mud flats fringed by sand. The southwest coast is fronted by narrow tidal sand flats. Beyond the tidal flats on both sides of the island, the bottom drops off steeply so that the 10-fathom line in most places is less than ½ mile off shore.

The island in general is hilly, with elevations in some places of 600 feet or more. The slopes generally rise steeply from the coast, and in certain places, especially along the southeastern part of the shore, cliffs rise from the water's edge or a short distance inland. The island is sparsely covered with coniferous trees.

West of the center of Sunwi-do is the small island of Ohwa-do (*Erha To* on U.S.H.O. chart 3237). A navigable channel with a controlling depth of 7 fathoms leads northeastward between Sunwi-do and Ohwa-do. Tidal mud flats lie off the northeastern shore of the island. The remainder of the island is bordered by a reef, and sand bars lie off shore. The island is hilly, reaching a maximum height of more than 250 feet.

North of Sunwi-do is Yongwi-do (*Yonger To*), which forms the western shore of the inlet, Kangnyong-gang (*Kōrei-kō*). This island is surrounded by tidal mud flats. The water to the west of the island is shallow, but the main channel to the east reaches depths of 11 fathoms. The island is hilly, reaching a maximum elevation of 345 feet. It is largely uncultivated, and has a sparse covering of coniferous trees. A few small houses lie at the south tip of the island. North of Yongwi-do is another small island, about ¾ mile long.

4

This subdivision comprises a large inlet leading off the main bay. Its north entrance point is a hill 521 feet high. The inlet is irregular in shape, and is filled with tidal mud flats. The north and south shores of the inlet are backed by hills, which reach the coast in bluffs or steep slopes. The eastern shore is low, and fronts a coastal plain about 1 mile wide. A small stream drains into the head of the inlet. The coastal plain is cultivated in rice; the hills have a covering of coniferous trees.

5

This subdivision comprises part of the southeastern shore of Kangnyong-gang (*Kōrei-kō*). The coast is bordered by tidal

mud flats except for the northeasternmost 2-mile stretch, which is fronted by tidal sand flats. The Kangnyong-gang channel has a controlling depth of 7 fathoms.

The shores of this subdivision, except for the heads of indentations, are either steep and hilly or have hills rising a short distance inland. There are small coastal plains at the heads of most of the small bays or coves which break the coastline; these plains are cultivated in irrigated rice. Hilly areas are grassy, or support a sparse growth of coniferous trees. Lying west of the north end of the subdivision is the island of To-do, which splits the Kangnyong-gang (*Kōrei-kō*) channel into 2 parts. It is surrounded by tidal mud flats, and its west shore is lined by cliffs.

6

This subdivision consists of a large indentation from which lead 4 small inlets. All except the northernmost inlet are filled by tidal mud flats; the northern inlet is filled with tidal sand flats, which also extend along the channel in the main bay. The westernmost inlet largely is bordered by rolling hills which descend to the coast in steep slopes; a stream flows through a narrow coastal plain at the inlet's head. Between the western and southeastern inlets is a promontory with steep hills which terminate in steep slopes. Steep slopes also line most of the shore of the southeastern inlet, reaching a height of 631 feet at the western entrance point; a narrow valley lies at the inlet's head. The northeastern inlet has steep slopes on its south and northwest shores; the east and north shores consist of a coastal plain backed by steep hills. The peninsula lying between the northeastern and northern inlets is composed of precipitous hills reaching a height of 503 feet at the south entrance point of the northern inlet. The northern inlet is surrounded by rolling to precipitous hills, descending in steep slopes except at the head of the inlet where there is a narrow coastal plain.

The hills have a sparse covering of coniferous trees, including scrub pine. The small coastal plains and valleys are cultivated in rice.

7

This bay is divided into 3 large irregular arms, all of which are filled with tidal mud flats with an outer fringe of sand flats. The eastern arm has steep slopes and 2 miles of cliffs on its southern shore, a low coastal plain at its head, and rolling hills which slope down to the water on the north shore. The north arm has rolling hills on its east coast; elsewhere, the north arm is bordered by a coastal plain, as much as a mile wide, backed by low hills. A cultivated coastal plain merging into rolling hills also lies at the head of the western arm; smaller cultivated patches are located along the generally steep north and south shores. The southeast entrance point of the western arm is formed by the tip of a rugged peninsula, which reaches a height of 368 feet; part of the coast of the peninsula is fringed by cliffs. A small pine-covered islet, Chu-do, lies at the point where the three inlets merge.

8

This subdivision is bordered by tidal mud flats which line the coast and virtually fill the inlet in the north.

The north and south shores of the inlet largely are bordered by hills extending to the coast in slopes and bluffs; at the head of the inlet, a broad cultivated valley extends across the penin-

sula. The remainder of the subdivision is bordered by rolling hills, reaching the coast in steep slopes. The island, Sin-do, consists of low hills; it is surrounded by tidal mud flats.

9

Tidal mud flats, fronted by a sand shoal on which there are several rocks, border this subdivision. The flats fill the inlet at the east end.

Low hills line the east and west sides of the inlet. A narrow cultivated plain backed by hills lies at the head of the inlet; the plain is split by hills which reach the water's edge. There are 2 small islands near the inlet's head. A slender hill-lined arm of a peninsula forms the western shore of the inlet. A stretch of cliffs about 1 mile long extends northeastward from the peninsula's southwestern extremity, which is the western end of the subdivision. A small hilly island, Chong-do, lies immediately to the southwest.

10

This subdivision consists of a large inlet. Except for 1½ miles at its west end, it is bordered by tidal mud flats which are fringed at their outer borders by tidal sand flats. Its eastern shore is made up largely of a coastal plain of varying width, interrupted in places by hills coming down to the water's edge. Steep slopes line the western coast, reaching a height of 682 feet.

11

The two inlets* located at either end of this subdivision are separated by a rather steep coast; the hills in this stretch slope to the water's edge except for a small cultivated valley near the middle. The hills are generally grassy, although there are a few groves of trees. Rice grows in the valley.

The eastern inlet is a small indentation at the mouth of a stream. The inner part is blocked off by a narrow wooded island, which is connected to both sides of the inlet, probably by causeways. A road leads across the inlet by way of the island. Two small grass-covered islets lie at the head of the inner part of the inlet. The valleys of the main stream and another smaller stream are grassy; little cultivation is indicated. A village lies on the east shore of the inlet.

The western inlet is almost closed by a low-lying grassy sandspit extending westward from a sandy beach (beach area (284)) along the eastern side of the entrance. A narrow coastal plain backs the shore of the inner part of the inlet. The plain and the floors of 2 small valleys leading inland are cultivated.

12

Deep water lies close to the shore along most of this subdivision. The inlet near the western end of the coast is filled with tidal sand flats.

The coast is lined by precipitous hills, which in most places descend to the shore in steep slopes and bluffs. The hills reach a maximum elevation of about 480 feet. Except for the shores of the inlet, the coast is lined by reefs and offshore rocks. Several detached rocks lie within the inlet. The inner three-

* U.S.H.O. chart 3237 disagrees with Plan 29 and the Japanese 1:50,000 as to the nature of these 2 inlets. The eastern inlet is shown on the chart as being much larger and having 2 long narrow arms filled with mud flats. The western inlet is shown as an open cove with sandy shores; the inner part shown in FIGURE IV-151 is not indicated.

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COASTS AND LANDING BEACHES

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quarters of the inlet is lined by a sand beach (beach area (284)) backed by a narrow coastal plain.

The narrow plains and valleys are partly cultivated in irrigated rice.

The hills are largely grassy, with a few coniferous trees.

(2) Landing beaches.

TABLE IV - 50

LANDING BEACHES OF COASTAL SUBSECTOR 43 X
Reliability FAIR. (PLANS 29 and 30)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(279) SE of Chang-hyon-san. (PLAN 29)	Center of beach obstructed by many rocks and small islands; fronted by sandy drying flat.	2.6 mi.	50 to 75 ft.	1 on 15.	Surf heavy with S winds.	Sand; drift E and W from center of beach.	Beach fronts a low sandy spit 0.3 mi. wide in the center; tapering toward the end; hills lie inland.	Improved road lies 1.5 mi. inland over low hills and cultivated valleys.
(280) NW of Tung-san-got. (PLAN 29)	Obstructed by many small islands and rocks; small sandy drying flat fronts beach.	1.4 mi.	25 to 50 ft.	1 on 10.	Surf heavy with SW winds.	Sand and pebbles.	Small rice-covered valleys behind ends of beach; hill slopes behind center.	Trails within 1/2 mi. lead to improved road 2 mi. inland.
(284) End of peninsula S of Taedong-man. (PLANS 29 and 30)	Partly obstructed; fronted by narrow sand flats.	Beaches average 1 mi.	25 to 50 ft.	1 on 10.	Surf moderate.	Firm sand.	Hills and narrow valleys.	Trails skirt shore; lead over hills to main road 5 to 10 mi. inland.

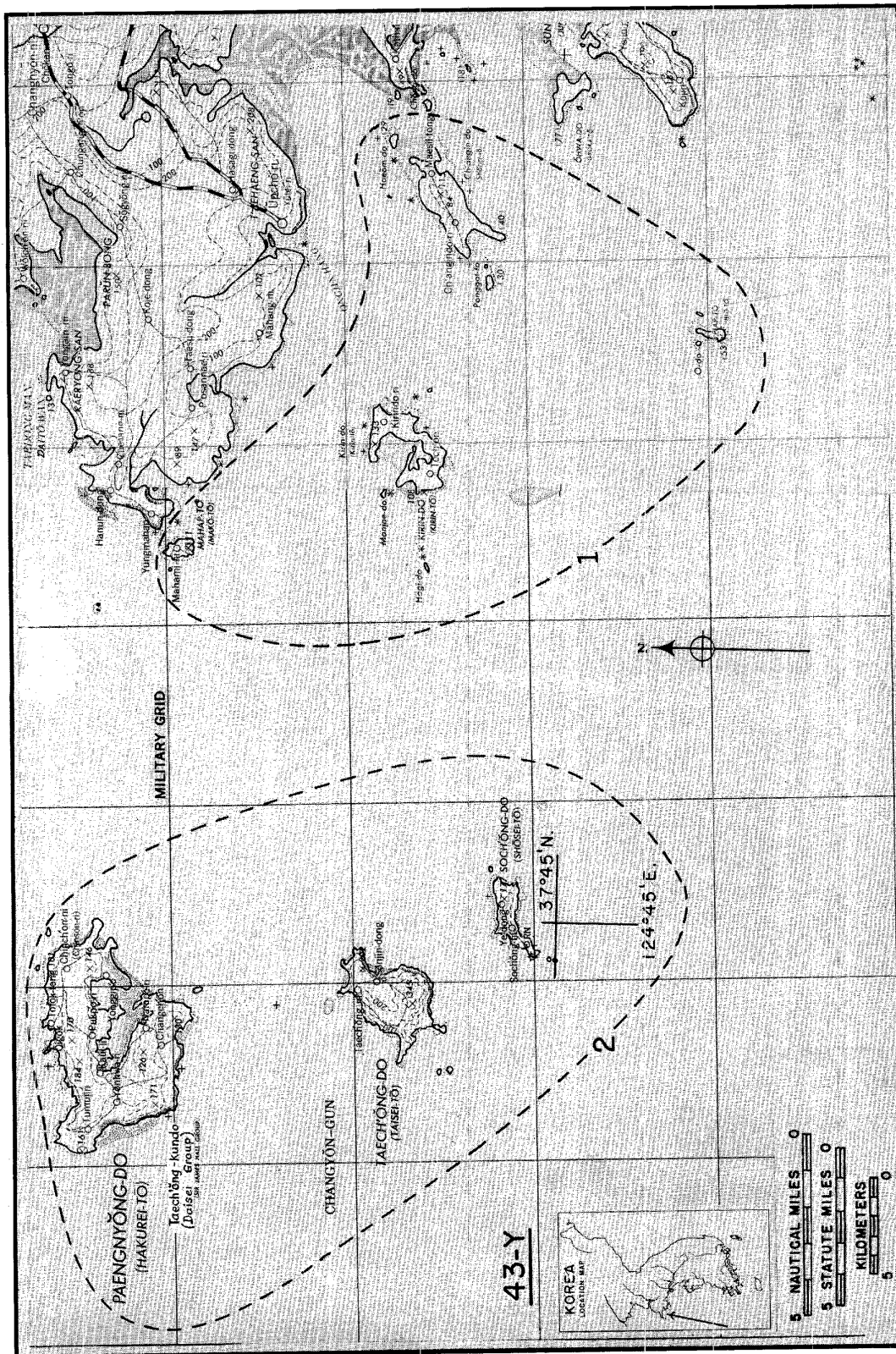


FIGURE IV - 152. Coastal subsector 43 Y.
Beach areas are shown on PLANS 29 and 30.

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Y. Taech'ong-kundo (Daisei Group) and associated islands.

(37°45'N to 37°59'N, and 124°37'E to 125°12'E)
(PLANS 29 and 30; FIGURE IV - 152; U.S.H.O. chart 3237)

(1) Coast.

This group of islands is composed of the Taech'ong-kundo (Daisei Group on U.S.H.O. chart 3237) and 4 small islands which lie closer to the mainland. The islands are generally hilly, cliffy, and rather deeply indented. The coasts are largely composed of cliffs which rise from the water's edge and are backed by hills. All the islands are inhabited, and some rice is cultivated in the valleys. Several rocks and smaller islets lie off shore of the islands, and sand banks lie between many of them. The westward approaches to the Taech'ong-kundo are deep. A fairly deep channel separates this island group from the islands lying near the mainland, but 3 long banks and a few scattered rocks constitute a danger to navigation.

1

Piap-to (Piyobu Somu), a conspicuous serrated island reaching an elevation of 174 feet, is the smallest of the 4 islands lying off the mainland. Its coast is almost entirely cliffy. The northeastern and northern shores are fronted by a tidal sand flat. A small islet and a few scattered rocks and shallows lie eastward. A bank, Kirin-su (Kurin Shu), extending about 5 3/4 miles northward, lies northwestward of Piap-to. It has depths of 1/2 to 2 1/2 fathoms over it.

Ch'angin-do (Chanrin To) lies on a large shallow bank which extends southeastward about 3 1/4 miles and northwestward about 5 1/3 miles. The western coast is cliffy in places, and the coves which indent the island are filled with tidal sand flats. The hills rise generally from the water's edge, and are covered with scrub pine and other coniferous trees. Several rocks and small, hilly, uncultivated islets lie off Ch'angin-do.

The northeastern part of Kirin-do (Kerrin To) is 437 feet high, and the southwestern part 363 feet high. The 2 parts of the island, connected by an isthmus, enclose a small bay which is filled with tidal sand flats. The coast of this island is generally cliffy, but the small coves which indent the coast are filled with sand and have beaches (beach area (281), TABLE

IV - 51) at their heads. Several rocks and small, hilly, uncultivated islets lie off this island. The lowland is cultivated in irrigated rice; the hills are covered with scrub pine and other coniferous trees.

The western coast of Mahap-to (Somummaubi) is composed of cliffs which rise directly from the water's edge. The hills of the island have a covering of coniferous trees.

2

Soch'ong-do (*Shōsei-tō*), the southernmost island of the Taech'ong-kundo (Daisei Group) is 579 feet high. The southeastern point of the island is a conspicuous white cliff fronted by a white rock. The coast is steep and largely composed of cliffs. The hills are grassy, with a few groves of deciduous trees.

Taech'ong-do (Daisei To) is 1,133 feet high; the summit, when seen from the westward, appears conical in shape. The coast is generally composed of precipitous cliffs, except for a beach (beach area (282)) in an indentation on the east side, and a conspicuous white sandy beach on the north coast. Tidal sand flats fill the coves which indent this island. A shoal with an average depth of 2 fathoms extends northwestward from the entire western coast; several small islets lie off shore. Grassy hills rise behind the coast.

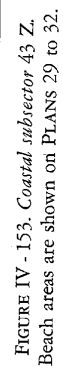
Paengnyong-do (Pengyong To), the largest island of the Taech'ong-kundo (Daisei Group), is 605 feet high. The northwestern part of the island is densely wooded, and the coast is fronted by overhanging cliffs, which rise to 527 feet. The remainder of the coast also is composed largely of cliffs, broken in places by short sandy beaches (beach area (283)). The coves which indent the coast are generally filled with tidal sand flats. The eastern shore is broken by a large, shallow bay; the inner part of the bay is filled with tidal mud flats which are fronted by tidal sand flats extending to the bay's entrance. The northeastern entrance point of this bay is a sandspit which is fronted on the east side by narrow tidal sand flats. Most of Paengnyong-do has a sparse covering of deciduous trees. The slopes of the hilly ridges, which extend in an eastward - westward direction, are covered with grasslands. Several small rocks lie off shore.

(2) Landing beaches.

TABLE IV - 51

LANDING BEACHES OF COASTAL SUBSECTOR 43 Y
Reliability FAIR. (PLANS 29 and 30)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(281) Kirin-do. (PLANS 29 and 30)	Generally obstructed; beaches fronted by sand flats.	Several beaches; max. 0.8 mi.	25 to 50 ft.	1 on 10.	Surf moderate; lighter on SE.	Sand.	Central part of island low; hills on borders; beach N of Toch'on is on low sandy spit.	Trail runs length of island.
(282) Taech'ong-do. (PLAN 30)	Fronted by narrow sand flats.	4 pocket beaches; average 0.4 mi.	25 to 50 ft.	1 on 5.	Surf moderate.	Sand and pebbles; some scattered boulders; sand on NE beach.	Slopes increasing inland to high hills.	Trail skirts shore.
(283) Paengnyong-do. (PLAN 30)	Generally obstructed by nearshore rocks.	Several beaches; longest 1.6 mi.	25 to 50 ft.	1 on 10.	Surf generally moderate; heavy on SW.	Sand and pebbles.	Narrow cultivated valleys backed by low hills; longer beaches in NE on sandspits.	Trails.



Z. Southern entrance point of Taedong-man (*Daitō-wan*, Tatong Bay) to Changsan-got (Chansan Kotsu).

(37°55'N, 124°59'E; 38°08'N, 124°39'E)

(PLANS 29 to 32; FIGURE IV - 153; U.S.H.O. charts 3237 and 3243)

(1) Coast.

The head of Taedong-man (*Daitō-wan*, *Taitō-wan*, Tatong Bay) is filled with a mud and sand flat which is covered by 1 to 2½ fathoms of water. Westward the gradient becomes steeper and the coast in the vicinity of Changsan-got (Chansan Kotsu) is steep-to. A sand bank under 2 to 9 fathoms of water lies in a southeast - northwest direction along the entire subsector. Two islands and several above-water rocks lie off shore.

The coast along the first and last stretches of this subsector is composed of stretches of cliffs and rocky shore interrupted in places by small pockets of sand. The middle portion of the subsector is deeply indented by the inner part of Taedong-man (Tatong Bay) and consists of sandy shore broken here and there by cliffs.

The inland terrain of the first part of the subsector consists of hills with occasional small, narrow valleys and a narrow coastal plain bordering the largest indentation. Inland of Taedong-man another coastal plain is backed by hills. For about 10 miles eastward from Changsan-got (Chansan Kotsu) steep hills rise abruptly from the water's edge.

1

The coast of this subdivision is composed of stretches of cliffy, sandy, and rocky shore. The first 3 miles forms the northwest side of a small, hilly, slightly indented promontory (U.S. H.O. chart 3237). Just northward of the southwestern extremity, there is a 1-mile beach (beach area (284), TABLE IV - 51). The promontories separating the small indentations are fronted by cliffs, and the bayheads are bordered by narrow sand flats. Hills extend, in some places, to the water's edge. Stream valleys are usually planted to irrigated rice, as is the terrain immediately behind the eastern part of the bayhead. The uncultivated slopes of the hills are covered with scrub pine.

At the end of this 3-mile stretch the coast is indented by a small shallow cove, at the head of which is a narrow sand flat. The shore around the head of the cove is sandy (beach area (284)). A small, narrow, uncultivated island lies off the eastern entrance point. The valley of the stream which empties into the cove is cultivated in irrigated rice, as is the terrain immediately behind the eastern part of the bayhead. The northern part of the eastern shore is backed by uncultivated hills.

Beyond the small promontory which forms the northeastern entrance point of this cove, the coast, for a distance of about 2 miles, is mainly low and sandy (beach area (284)), and is fronted by a sand flat. It is backed almost immediately inland by uncultivated hills. Some irrigated rice is found along this stretch. At the end of this 2-mile stretch a hilly, uncultivated promontory juts westward and is tipped at the westernmost point by a small, uncultivated island. This hilly promontory forms the western entrance point of a deeply indented, irregular bay, entirely filled by a tidal mud flat which is fronted by a narrow sand flat. A narrow sand beach (beach area (285), TABLE IV - 52) fronts the village of Yongam-ni, close within the western entrance point of the bay. About 1¼ miles from the west entrance point the coastal hills begin to recede and a narrow coastal plain borders the bay on the southern and

eastern sides, broadening perceptibly as it extends northeastward. The ridge of hills behind the southern and eastern shores is generally about ½ mile inland. The coastal plain is cultivated in irrigated rice fields, which extend eastward along a comparatively broad valley. The hill slopes are covered with a growth of coniferous and some broadleaf trees. The small promontories which jut out into the bayhead are low and are uncultivated. For about 2½ miles along the southeastern shore of the bayhead there is a narrow strip of marsh which is almost entirely fronted by salt pans. Two large promontories form the northeastern side of the bay. A ridge of wooded hills extends to the extremity of the southern of these promontories. A narrow coastal plain which extends almost uninterruptedly along the shores of this promontory is cultivated in irrigated rice. Small valleys leading inland are also cultivated in irrigated rice. The tip of the north promontory forms the northeastern entrance point of the bay. Generally this promontory is low and uncultivated; it is backed by grassy hills which have a sparse growth of scrub pine and other coniferous trees. A small islet lies close off the southwestern extremity of the promontory, and another islet lies about ½ mile to westward.

Northward from the promontory just described, the coast of the last 3½ miles of this subdivision is a series of sandy coves (beach area (286)) separated by rocky bluffs (FIGURE IV - 154). The shore is fronted by a tidal sand flat, fringed and broken by rocky patches. This stretch of coast is backed by low hills which are covered with grass, growths of scrub pine, and other coniferous trees. There is an area of irrigated rice fields inland along the northern part of this stretch. Two small rocky islets and several rocks, which are surrounded by sand, lie off the central part of this stretch.

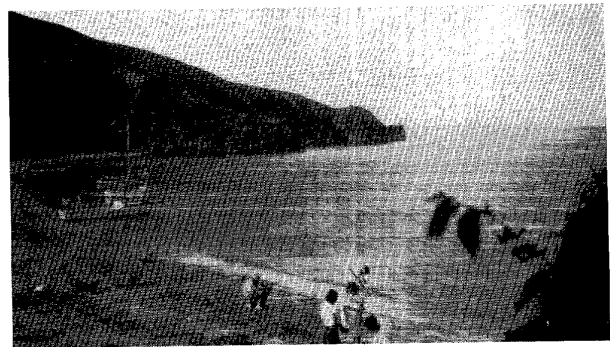


FIGURE IV - 154. West coast, Taedong-man (*Daitō-wan*, Tatong Bay). Beach area (286).

One of several small beaches at the heads of coves in the vicinity of Groves Bluff; exact location uncertain, but probably one of the beaches south of the point, looking south-southwestward. 1932. Approximate position of Groves Bluff, 38°03'N, 125°07'E; U.S.H.O. chart 3237.

2

The coast of this subdivision is composed of long stretches of sand broken here and there by cliffs and almost entirely fronted by tidal sand or mud flats.

The small promontory called Groves Bluff, which forms the southern entrance point of the inner part of Taedong-man (Tatong Bay), is hilly and uncultivated. The southern shore of the inner bay consists of short sandy beaches (beach area (286)) interrupted by small outcropping, hilly capes, and by four short stretches of cliffs. About 2¾ miles eastward of

Groves Bluff there is a small diked area. A small cultivated plain lies at the head of the bay where two streams flow into it. Along the northern shore of the inner bay, a strip of low ground and gentle slopes lies between the water line and the steeper wooded hills inland. Along this shore line there are several dikes and the entire bayhead is filled with tidal mud flats.

The low coastal areas and occasional small valleys around the inner bay are generally planted to rice.

The subdivision ends with a 5-mile stretch of almost continuous sandy beach (beach area (287)). The eastern part of this stretch is largely reef-fringed; the western part consists of a sandy bight flanked by Fort Point (U.S.H.O. chart 3243), the cliffy promontory which terminates the subdivision, and another similar promontory 2 miles eastward. Reefs fringe the western shore of the bight; the head and the eastern shore are fronted by a tidal sand flat. A small stream empties into the head of the bight, and there is some rice cultivation in its valley. Elsewhere the sand is backed by grassy slopes and steeper wooded hills.

3

This subdivision consists of a long sand beach which is described in detail as beach area (288).

4

The coast of this subdivision is difficult of access throughout, and consists mainly of rock-fringed cliffs rising to steep slopes. In the eastern part of the subdivision are 2 low-lying stretches, each about a mile long, but these are fringed by reefs, with only short sand pockets where the reefs are interrupted. Westward toward Changsan-got (Chansan Kotsu), the terminal point of the subsector, the coast is increasingly cliffy, and low-lying pockets, mainly at stream mouths, are both fewer and shorter.

The inland terrain of this subdivision consists of uncultivated hills rising steeply from the coast, and covered with growths of scrub pine and other coniferous trees.

A small, uncultivated, hilly island, Wollae-do (Orura To), 201 feet in height, lies about 3 miles southward of the eastern end of this subdivision. The coast of this island is generally cliffy; it is broken in two places by small sandy stretches, but is almost entirely fronted by rocky ledges. Several small rocks lie off the eastern coast of the island.

(2) *Landing beaches.*(a) *General.*

TABLE IV - 52

LANDING BEACHES OF COASTAL SUBSECTOR 43 Z
Reliability FAIR. (PLANS 29, 31, and 32)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(285) Vicinity of Yongam-ni. (PLAN 29)	Approach channeled; fronted by wide mud flat.	0.3 mi.	15 to 25 ft.	1 on 10.	Surf light.	Sand.	Small flat backed by hills.	Trails lead over high hills to secondary highway 7 mi. inland.
(286) E and S shores of Taedong-man. (PLANS 29 and 31; FIGURE IV - 154)	Approach channeled; fronted by wide sand flats.	Many short curved beaches; average 0.5 mi.	15 to 25 ft.	1 on 10.	Surf light.	Sand; scattered boulders.	Small flats encircled by hills.	Trails skirt shore on N, are separated from shore by hills on W; secondary highway 2 to 9 mi. inland.
(287) N shore of Taedong-man. (PLAN 31)	Approach channeled; fronted by sand flat, and partly obstructed by reefs.	5.7 mi., interrupted by several rocky points.	25 to 50 ft.	1 on 15.	Surf light.	Firm sand.	Gently sloping plain 3 mi. wide with river valley near W end.	Improved road within 1.5 mi. of all points on beach connects to secondary highway 20 mi. E near Taet'an.
(288) N shore of Taedong-man, vicinity of Kujin-ni. (PLANS 31 and 32; FIGURES IV - 155 to IV - 164) (See also (b) below.)	Small islands in approach; fronted by 500-ft. sand flat.	11.4 mi., interrupted by streams and lagoon mouth.	25 to 50 ft.	1 on 15.	Surf moderate; heavy with SW winds.	Firm sand.	Gently sloping plain up to 3 mi. wide; alternate dunes, bluffs, rice land and open country back beach.	Improved road parallels most of beach within 1 mi.

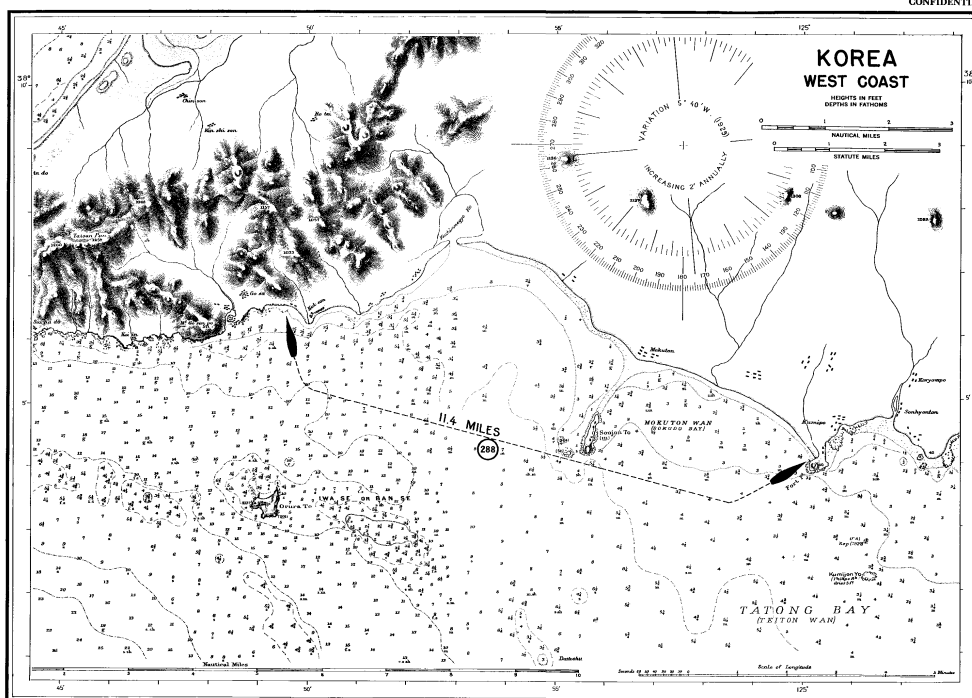


FIGURE IV - 155. West coast, Tachong-mun (Tatong-mun, Tatong Bay). Beach area (288).
Section from U.S.H.G. chart 5545.

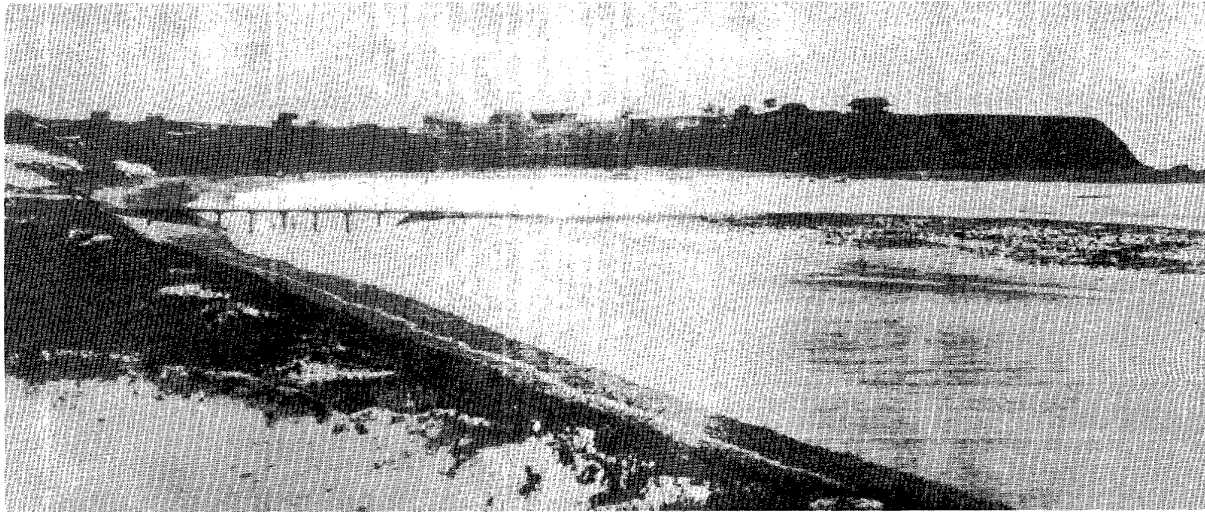


FIGURE IV - 161. *West coast. Taedong-man (Daitō-wan, Tatong Bay). Beach area (288).*
View south-southeastward over eastern end of beach area toward headland terminating in Fort Point. In foreground, creek channel crossed by small pier used for loading sand. Note pebbly character of beach, and steep slope, which are temporary features; beach is usually flat and sandy. Photograph taken at or near high tide. 1940. Approximate position $38^{\circ}04'N$, $125^{\circ}00'E$; U.S.H.O. chart 3243.

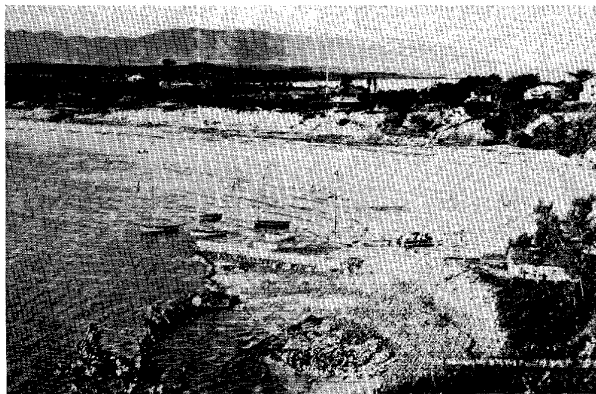


FIGURE IV - 162. *West coast. Taedong-man (Daitō-wan, Tatong Bay). Beach area (288).*

View northwestward from headland terminating in Fort Point over eastern end of beach area. Photograph taken near time of low tide. Note firm sand flat exposed, low dunes immediately behind beach, and rolling plain backed by high mountains. Approximate position $38^{\circ}04'N$, $125^{\circ}00'E$; U.S.H.O. chart 3243.

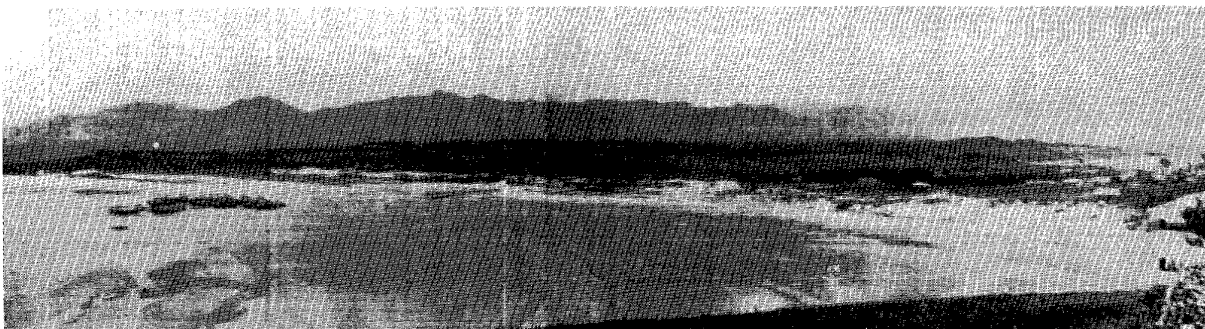


FIGURE IV - 163. *West coast. Taedong-man (Daitō-wan, Tatong Bay). Beach area (288).*
Panoramic view northwestward from headland terminating in Fort Point over eastern part of beach area. Photographs taken near time of low tide. Note soft sand flat, with channels crossing it in foreground, and change from firm surface shown in FIGURE IV - 162. Approximate position $38^{\circ}04'N$, $125^{\circ}00'E$; U.S.H.O. chart 3243.



FIGURE IV - 156. *West coast. Taedong-man (Daitō-wan, Tatong Bay). Beach area (288).*
Southern end of Yuk-to (Sonjon To), island 1 mile off central part of beach area, looking southwestward. Approximate position $38^{\circ}04'N$, $124^{\circ}55'40''E$; U.S.H.O. chart 3243.



FIGURE IV - 157. *West coast. Taedong-man (Daitō-wan, Tatong Bay). Beach area (288).*
Landing place on Yuk-to (Sonjon To), island 1 mile off central part of beach area; probably near southern end of west side of island, looking west-northwestward. Rock marked "A" is also seen on FIGURE IV - 158. 1935. Approximate position $38^{\circ}04'10''N$, $124^{\circ}55'40''E$; U.S.H.O. chart 3243.



FIGURE IV - 158. *West coast. Taedong-man (Daitō-wan, Tatong Bay). Beach area (288).*
View, probably west-southwestward, over landing place seen in FIGURE IV - 157; Section of beach there seen is to the left of that shown here. 1935.

(b) *North shore of Taedong-man (Tatong Bay), vicinity of Kujin-ni; beach area (288).* Reliability FAIR. (PLANS 31 and 32)

1. LOCATION AND EXTENT. An interrupted sand-and-pebble beach extends for 11.4 miles along the north shore of Taedong-man (*Daitō-wan, Taitō-wan, Tatong Bay*), on the south side of the prominent peninsula stretching far to the west from the coast of northwestern Korea. The approximate limits of the beach area are $38^{\circ}06'N$, $124^{\circ}50'E$; $38^{\circ}04'N$, $125^{\circ}00'E$ (FIGURES IV - 155). The beach is one of the few landing places on the entire west coast of Korea where the approach is



FIGURE IV - 159. *West coast. Taedong-man (Daitō-wan, Tatong Bay). Beach area (288).*

View southward toward summer resort on headland terminating in Fort Point, at eastern end of beach area. Photograph taken near time of low tide; note firmness of exposed sand flat. Approximate position $38^{\circ}04'N$, $125^{\circ}00'E$; U.S.H.O. chart 3243.

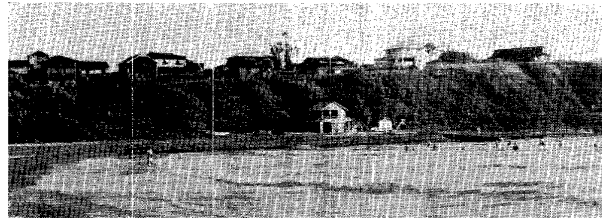


FIGURE IV - 160. *West coast. Taedong-man (Daitō-wan, Tatong Bay). Beach area (288).*

View southward toward headland seen in FIGURE IV - 159, showing eastern limit of beach. Note gentle bottom slope shown by distance of bathers from shore. 1940.

not strongly channeled; where the tidal flat which fronts the beach is relatively narrow and sandy; and where exits lead to a fairly extensive lowland. However, the lowland is not near any of the major roads or railroads of western Korea; the nearest railroad is 15 to 20 miles to the northeast over rough terrain. Good landmarks are the headland bounding the beach on the east and the two small islands Wollae-do (*Orura To*) and Yuk-to (*Sonjon To*), which are 3.3 miles south of the west end of the beach, and 1.5 miles south of the center of the beach, respectively. Yuk-to is rugged and rock-strewn, with a much obstructed nearshore approach, but landing is possible in small sand-and-pebble pockets (FIGURES IV - 156 to IV - 158). The headland at the east end of the beach is flat-topped (FIGURES IV - 159 to IV - 161); on it was built a summer resort for Americans and Europeans, among whom the beach was known as Sorai Beach.

2. SEA APPROACH. The sea approach to the 30-foot depth line is channeled by a group of islands 15 to 30 miles southwest of the beach area (PLAN 29). The near approach is channeled by Wollae-do (*Orura To*), and a series of shoals extending southeast and west from this island; these lie chiefly off the western two-thirds of the beach (FIGURE IV - 155). The 30-foot depth line is irregular; for the part of the beach between Yuk-to (*Sonjon To*) and the western limit it averages 2.5 miles off shore, although it swings abruptly in to 0.4 mile at the western limit. From Yuk-to to the eastern limit of the beach the line swings seaward from 2 miles to 4 miles. At the west end of the beach the 18-foot depth is 0.5 mile off shore, swings roughly parallel to the shore for 4 miles, then turns

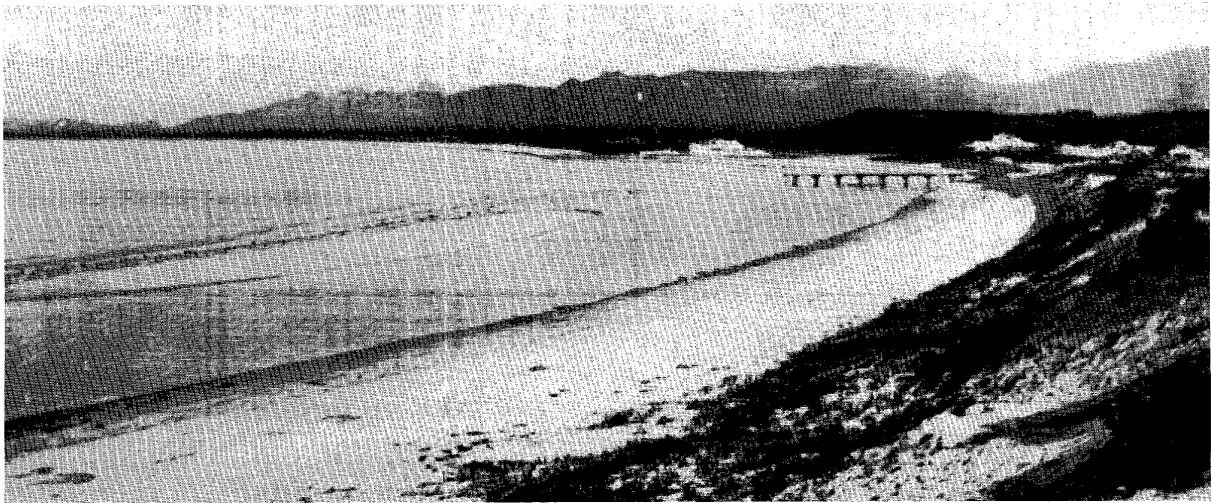


FIGURE IV - 164. *West coast. Taedong-man (Daitō-wan, Tatong Bay). Beach area (288).*

View west-northwestward from near eastern end of beach area. Photograph taken at or near high tide. Note beach width of 15 to 20 feet above high water line, and low sand dunes backing beach. Approximate position 38°04'N, 125°00'E; U.S.H.O. chart 3243.

abruptly seaward to round Yuk-to and the two small islands to the southwest, before continuing east at an average distance of 1.6 miles off shore. The bottom slope inside the 18-foot depth averages 1 on 150 for the west half of the beach, 1 on 400 for the east half. The nearshore is generally clear; the shoal running from Yuk-to northeast to the beach, and a few scattered rocks, constitute the chief obstructions. FIGURES IV - 159 to IV - 164 show that there is a great variation in the character of the sandy tidal flat fronting the beach, and shifting sandbars parallel to the shore are probably present at least part of the time. The bottom material is chiefly sand and shells within 1,000 feet of the shore, grading out into mud. Waves come in to the beach from the south and southwest. The range of spring tides is between 20 and 25 feet, the neap range 15 to 20. The tidal currents set east with rising tide and west with the ebb, but are not strong.

The prevailing winds are from the northwest in December, and gradually shift through west, southwest, and south from winter through spring. During the summer months they come from the south quadrant. Heavy rains come in July and August, and heavy surf from the southwest follows frequent August storms. In general, however, surf is continuous but light.

Fairly sheltered anchorage is possible 10 miles from the beach, and east of Taech'ong-kundo (the Daisei Group of islands, U.S.H.O. chart 3237), in depths of between 10 and 28 fathoms over a bottom of sand, gravel, rocks, and stones.

3. CHARACTER OF BEACH. The beach is interrupted 3.4 miles from the west end by the mouth of a shallow lagoon; otherwise it is continuous except for two small streams on either side of Kumsu-ri (Mokuton) and another near the east end of the beach (FIGURES IV - 161, IV - 163, and IV - 164). The total length of the beach is 11.4 miles; it has a width of 25 to 50 feet at high tide, and a foreshore slope which averages 1 on 15, but may vary from 1 on 30 to 1 on 5. (FIGURES IV - 161 and IV - 164). The beach is composed of fine white firm sand, but at some seasons may locally be covered with pebbles. The beach is fronted by a sandy drying flat 200 to 600 feet wide (FIGURES IV - 159 to IV - 164). The narrowest parts of the

flat front the east half of the beach. The long narrow drying flat which connects Yuk-to (Sonjon To) to the shore (FIGURE IV - 155) is composed of sand and pebbles, and it is likely that a large part of the drying flat fronting the beach west of Kumsu-ri is thickly dotted with a heterogeneous mixture of pebbles and boulders, while that to the east is clear. The drying flat has a slope of approximately 1 on 30 (FIGURE IV - 160). Surf is light or moderate except during storms and for a short period afterward, when it breaks in a belt extending several hundred feet from the shore with many lines of breakers. Shore drift is not pronounced; it is to the east at the east end of the beach, toward Kumsu-ri from both east and west, and toward the mouth of the inlet from both directions also. There are no structures reported on the beach except a small pier near the eastern limit. This pier extends across the mouth of a small creek which parallels the shore, running between the beach and a sandbar. The creek channel is 6 to 8 feet deep. The pier has been used as a loading place for the very pure quartz beach sand, which is widely used in Japan for making glass. (FIGURES IV - 161, IV - 163, and IV - 164).

4. ADJACENT TERRAIN AND EXITS. The beach is backed by a belt of low sand dunes, 15 to 20 feet high and 100 to 200 feet wide, which give way inland to gently rolling plain (FIGURES IV - 162 to IV - 164). The plain is largely under cultivation of dry crops, although there are scattered groves of trees. In contrast to most of the lowland areas of the west coast, the plain is well drained, and cross-country movement by men or vehicles is generally easy. The plain is backed by a steep, high range of mountains which are 5 miles inland at the east end of the beach. The mountains quarter toward the shore on the west, approaching to within 0.8 mile 1.5 miles east of the lagoon mouth near the west end of the beach. The lagoon lies in a recess in the mountains which is 2.5 miles wide at the shore, and extends a similar distance inland before narrowing to a mountain pass. West of the lagoon, the coastal plain is only 0.5 mile wide, and is broken and irregular. Beyond the west end of the beach the plain disappears; steep mountain slopes extend to the sea. East of the beach area the

plain is somewhat more rolling, but maintains its 5-mile width for almost 10 miles. Still farther east the mountains again swing toward the shore, but a narrow strip of plain extends all the way to the head of Taedong-man. A narrow gravel road skirts the shore in the beach area within 0.3 mile, except for the area near the lagoon mouth in the west, where the road swings inland to detour around the lagoon. The road continues east from the beach area to the head of Taedong-man along the coastal plain, crossing many small streams over wooden bridges. The road is passable except after heavy rains, when the streams become torrential and sweep out the bridges. The mountain can be crossed to the north through 2 narrow canyons extending northwest and north from the head of the lagoon near the west end of the beach area. There are a number of villages scattered over the coastal plain.

44. Changsan-got (Chansan Kotsu) to Yalu River

(38°08'N, 124°39'E; 39°49'N, 124°08'E)
(PLANS 31 to 34; FIGURE IV - 176)

The nearshore approaches to this sector of the coast are generally shallow, particularly along the northern part. They are encumbered by many long, narrow shoals and detached banks, which extend in a general north - south direction. Many of the shoals and banks are marked by drying sand bars. The tide range for this coast is approximately 15 feet, and tidal currents are strong. The winds are of the monsoonal type, blowing from the north quadrant in winter, and the south quadrant in summer. Wind velocities are low, and gales are uncommon. Fog occurs 20 to 25 days per year; it is most prevalent in summer, with a maximum of 4 days in August.

This stretch of coast, about 170 miles long, trends north-northeastward from Changsan-got (Chansan Kotsu) to the Ch'ongch'on-gang, then westward from the Ch'ongch'on-gang to the Yalu River at the Manchuria - Korea border. Southward of the Ch'ongch'on-gang, the coast is irregular, but is broken by only one major indentation, the estuary of the Taedong-gang (Daido Ko). Several islands, largest of which are Ch'o-do (Cho Da) and Sok-to (Soku To), lie close off shore. Westward of the Ch'ongch'on-gang, the coast likewise is irregular, and is fronted by many small islands.

Along much of the coast, hills fall steeply to the sea, and offshore rocks are common. Elsewhere, there are long unbroken stretches of marsh and several sandy stretches. The coast is fronted in the south by narrow sand flats; in the north, there are broad mud flats, many of which are fringed with sand flats.

Coastal plain areas tend to be somewhat larger in this sector than farther south, and the hills on the promontories and back of the coast generally are steeper and somewhat higher. Elevations of more than 1,000 feet are common. Cultivation in the valleys and on the coastal plains is largely limited to irrigated rice. The uncultivated land and the hill slopes are mainly covered with grass and scrub pine; there are other coniferous and deciduous trees, generally in sparse growths.

Except for the south part of the sector, there are few beaches. Those which do exist are short, narrow, and composed of sand and gravel; they are backed by hills, or by narrow flats enclosed

by hills. The coast for 40 miles north from Changsan-got, the southern limit of the sector, is fronted by almost continuous narrow sand beach. These beaches are backed by dunes or hills.

South of the Taedong-gang, the main communication lines are far inland. Between the Taedong-gang and the Ch'ongch'on-gang, an improved road roughly parallels the coast, but is accessible only by trails from the beaches. Northwest of the Ch'ongch'on-gang, a highway and railroad parallel the coast-line, lying far enough inland to avoid the deep bay indentations; thus they are not accessible from the peninsulas where the beaches are located, except over several miles of mountains.

A. Changsan-got (Chansan Kotsu) to north shore of Namch'on estuary.

(38°08'N, 124°39'E; 38°29'N, 125°00'E)

(PLAN 32; FIGURE IV - 165; U.S.H.O. charts 3236 and 3243)

(1) Coast.

A long narrow shoal, with least depths of 1¾ fathoms, roughly parallels this coast, at a distance of 5 to 8 miles from the mainland. There is deeper water inside the shoal, but approach to the coast is largely limited to the passages at its north and south ends.

The coast is composed mostly of sand, backed by dunes and plains; at the south end and near the middle, however, there are cliffs and bluffs. Except at the promontories, which are fringed with rocks and reefs, the coast is generally fronted by narrow tidal sand flats.

On the promontories and behind the coastal plains, hills rise steeply to heights of more than 1,000 feet. These hills are sparsely wooded with growth of scrub pine and other coniferous and deciduous trees.

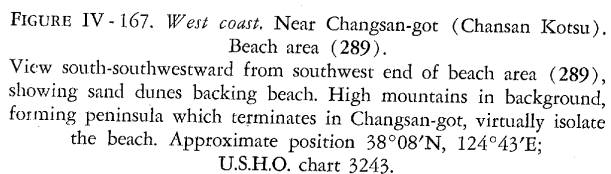
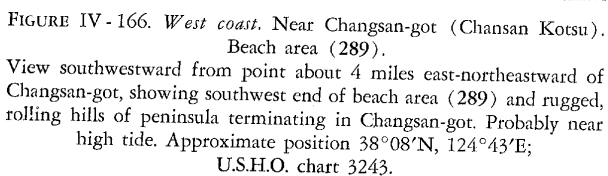
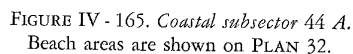
1*

Changsan-got (Chansan Kotsu on U.S.H.O. chart 3243) is the extremity of a peninsula which projects about 11 miles westward; the peninsula consists of rugged, rolling hills (FIGURE IV - 166), which are 1,257 feet high 5 miles east of the tip of the promontory. A few hundred feet west of the tip of the peninsula is a large rock, Taegam-am (Dai Gan Do), 135 feet high. Steep cliffs line the tip of the promontory as well as the stretch of coast for 2 miles northeastward of it. The peninsula is uncultivated and partly covered with scrub pine.

2

The coast northeastward from the peninsula to Gorinchi-ki (Phelan Point) is lined with an almost continuous beach (beach area (289), TABLE IV - 53), beyond which are sand flats. A belt of sand dunes (FIGURE IV - 167) backs most of the beach; farther inland, a narrow, flat coastal plain, which is marshy in places, is backed by low wooded hills. Mountains lie close to the shore in the southwestern and northeastern parts of the subdivision. About 7 miles east-northeastward of Changsan-got (Chansan Kotsu), is the estuary of Monggump'o (Munkumupo), a small inlet filled largely with drying sand flats. About 5½ miles farther northeastward is Koam-p'o (Kogan-po), a harbor at the mouth of the river Namdae-ch'on; the river (Ko gan po on U.S.H.O. chart 3243) reaches the

* Centered boldface numbers refer to coastal subdivisions numbered on strip maps, as in FIGURE IV - 165.



ocean through a marshy channel, the mouth of which is largely blocked by drying sand flats. For 3½ miles north of the Nam-dae-ch'on estuary, the coast is composed of a narrow sandy beach (beach area (289)) backed by dunes, and a continuous marsh which extends as far as 1½ miles inland. The beach is fronted by a narrow band of drying sand flats.

3

Gorinchi-ki (Phelan Point) is the bluff-lined, reef-bound extremity of a promontory which is backed by hills attaining heights of 1,300 feet. Northeastward of Gorinchi-ki, a sand beach (beach area (290)) extends about 1 mile to another cliff-bound point. Except for a sandy stretch along the northeasternmost 1½ miles, the remainder of the subdivision is lined with bluffs and bordered by an almost continuous narrow sand flat. Hills, largely covered with coniferous trees, rise abruptly from the coast in many places.

4

A beach (beach area (290)) extends to the mouth of a small stream which enters the ocean after flowing for about 1 mile behind and parallel to a narrow sand spit. The coastal terrain northward to the mouth of the Nam-ch'on is a rolling plain lined by low bluffs which are fronted by a beach (beach area (290)) fringed with narrow sand flats. Most of the land is covered with coniferous trees, but small areas have been converted to irrigated rice fields. About ¼ mile north of the west entrance point of the Nam-ch'on estuary is a small island, Chop-to. From the eastern entrance point of the estuary, a sand beach (beach area (292)) extends northward along the coast; it is fronted by sand flats and backed by a narrow plain.

(2) Landing beaches.

TABLE IV - 53

LANDING BEACHES OF COASTAL SUBSECTOR 44 A Reliability FAIR. (PLANS 31 and 32)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(289) NE of Chang-san-got. (PLAN 32; FIGS. IV-166 and IV-167)	Generally clear; 500 to 1,000 ft. sand flat in S, wider in N.	18 mi., interrupted by 2 large inlets, several small streams.	25 to 50 ft.	1 on 15.	Surf heavy with NW winds.	Firm sand; soft near river mouths and inlets.	Almost continuous sand dune belt, reaching a width of more than 1 mi. near center of beach; marshy plain backs dunes in places; mountains approach shore in SW.	Trail skirts shore at SW end; elsewhere trails are behind dune belt; main road and town of Chang-yon 15 mi. inland over rough hills.
(290) NE of Gorinchi-ki. (PLAN 32)	Generally clear; sand flat except at S end and center.	10.4 mi., interrupted by several rocky points.	25 to 50 ft.	1 on 15.	Surf moderate.	Firm sand; soft near stream mouths.	Steep hills on S; sand-spit, coastal flat, and low hills in center; sand-spit in N.	Trails skirt shore within ½ mi., lead inland 10 to 15 mi. over rough mountains to main road.
(292) Mainland E of Ch'o-do. (PLANS 31 and 32) (Note—color of water omitted on PLAN 31)	Approach restricted on S, beach fronted by sand flat.	7 mi.	25 to 50 ft.	1 on 15.	Surf moderate.	Firm sand.	Hills; small flats enclosed in hills.	Trails.

B. North shore of Nam-ch'on estuary to coast west of Taeryong-ni.

(38°29'N, 125°00'E; 38°51'N, 125°10'E)
(PLANS 31 and 32; FIGURE IV - 168; U.S.H.O. charts 3236, 3243, and 5598)

(1) Coast.

In this subsector, a large tidal range results in a broad expanse of tidal mud and sand flats; a number of sand bars lie off most of the shore.

The coastal terrain consists of dissected hills, rolling to precipitous, which either reach the coast or are bordered by coastal plains of various widths. Many of the coastal plains are marshy. Where the hills reach the coast, there are commonly either bluffs or cliffs.

The valleys and coastal plains are largely cultivated in rice. The hills have a generally sparse growth of coniferous and deciduous trees.

1

Ch'o-do (Cho Da) is a steep, hilly island. Except for narrow valleys and small coastal flats which have been planted in

irrigated rice, the hills composing the island are uncultivated and are covered by deciduous and coniferous trees. The southeast tip of the island is Huibong-kap (Toa Kaku on U.S.H.O. chart 3236), a hilly promontory backed by a hill 860 feet high. A cliff extends about 2 miles northwest of this promontory to a small beach (beach area (291), TABLE IV-54) fronted by a drying sand flat; just north of the flat is Sosa-gi (Sosha Ki), a cliff-lined promontory. This coastal stretch is bordered by a sand bar lying about 1 mile off shore. The precipitous, cliff-lined coast extends from Sosa-gi to Puk-kak (Hok Kak), a peninsula promontory which is the island's northern tip. Shoals border this coastal stretch. A small islet, Myong-do (Ri To), lies about ½ mile northward of the center of this stretch. The islet Tok-to (Hoku To), about 100 feet high, is ½ mile northwest of Puk-kak.

A drying sand flat which fronts a sand beach (beach area (291)) extends from Puk-kak southwestward about 1¾ miles; at the end of this stretch, the coast again is cliffy as far as Ch'u-bi (Hokake iwa Saki), a point 1¼ miles westward. One mile northwest of this point is So-do (Sei To), a rugged islet.



FIGURE IV - 168. Coastal subsector 44 B.
Beach areas are shown on PLANS 31 and 32.

Two small stretches of sand flats, the southern of which fronts a small beach (beach area (291)), extend from Ch'u-bi 1¼ miles southward to a cliffy promontory. An elongated hill, Ihyon-san (Dei Kwan San), runs eastward from this promontory to another promontory forming the south entrance point of a bay filled by sand flats. A small beach lies ¾ mile northwestward of the latter promontory. The remainder of the south shore of this island is largely lined by steep slopes and cliffs which are fronted by shoals and are indented at several places by small bays filled with drying sand flats; there is a small pocket beach about 2 miles west-northwestward of Huibong-kap.

2

The shallow bight along the south end of this mainland coast is backed by a narrow coastal plain behind which is a ridge of steep hills. The coast is bordered by sand flats (beach area (292), TABLE IV - 53) as far as the cliffy cape, Naeng-

jong-gi (Reisei Ki on U.S.H.O. chart 3243). A ledge of rocks, some of which are above water, extends about 800 yards west-northwestward of the cape. From Naengjong-gi to Pip'a-got (Hombagu Kaku), 3½ miles north-northwestward, the coast is backed by rolling hills. A beach (beach area (293)), fronted by sand flats, extends from a point ¾ mile east of Naengjong-gi 1¾ miles northward to a small bay filled with drying sand flats. Northwestward of this bay is the irregular, hilly peninsula, Pip'a-got, 164 feet high. A small island, 184 feet high, lies ½ mile northeastward of this point. The hills inland of this coastal stretch are uncultivated; isolated coniferous and deciduous trees grow on the hills. A few irrigated rice fields are found in the valleys.

3

Sok-to (Soku To), an island 440 feet high, lies 2 miles north-northeastward from Pip'a-got (Hombagu Kaku). The

island consists of dissected hills which reach the coast to form bluffs and a few cliffs. Two rocky islets connected by a rocky ledge lie close northwestward of the northern end of the island. A shoal extends from the northeast end of the island to the mainland. There is little cultivation except for some irrigated rice; the hills are covered with scrub pine. There are two small beaches (beach area (294)) on the northeast side of Sok-to, and one at the southwest end. A drying sand flat extends from the island's southeast point to within 1 mile of the northeast point, and a similar flat fills the large bay on the western side.

4

The coast in this subdivision, from Pip'a-got (Hombagu Kaku) to the estuary of the Taedong-gang (Daido Ko) is hilly and deeply indented. The indentations are nearly filled with large areas of drying mud and sand flats. A cliff backed by hills extends 2 miles eastward from Pip'a-got to a small beach (beach area (293)) which is fronted by drying sand flats. Another small beach stretches almost to a promontory, 140 feet high, which forms the western entrance point of a bay filled with drying mud flats; the bay's shores are backed by a rolling plain. A beach (beach area (295)) extends 1½ miles southward of the promontory; another beach of similar length lies on the bay's eastern shore. The bay is fronted by 2 cliffy islets, Ch'ongyang-do, about 300 feet high, and Ung-do, 394 feet high. A narrow sand flat extends off the south coast of the former islet; Ung-do is encircled by a wide sand flat, except along the north shore.

From the promontory which is the eastern entrance point of the bay, the coast extends eastward to the estuary of the Han-ch'on; low hills back this stretch. From the mouth of the Han-ch'on, the coast trends northward to the peninsular promontory forming the south entrance point of the estuary of the Taedong-gang (Daido Ko). This promontory is formed by a ridge of steep hills descending to the sea in cliffs. Drying mud flats extend about 2½ miles off shore of this entire stretch. There are 3 small beaches (beach area (295)) in this extent.

There are 5 other small beaches in an indentation immediately eastward. From the eastern entrance point of the latter indentation eastward 7½ miles, the south shore of the estuary is indented by 2 small bays; short stretches of beach (beach area (296)), backed by steep hill slopes and narrow, steep valleys, line the coasts of both bays.

The city and important port of Chinnamp'o (Chapters VI and VIII) is located on the north bank of the Taedong-gang (FIGURE IV - 169), about 18½ miles east-northeastward of the island of Sok-to (Soku To). There is reported to be an airfield 10 miles northwest of the city (Chapter XIV). About 12 miles east of Chinnamp'o is the town of Kyomip'o, a river port (Chapter VI).

The hills and cliffs bordering the coast in this subdivision are uncultivated. Farther inland, the hills are sparsely covered with coniferous and deciduous trees. A few of the valleys have small irrigated rice fields.

5

The northern entrance point of the estuary of the Taedong-gang (Daido Ko) is Ilsu-gak (Irusa Kaku on U.S.H.O. chart 5598), a hilly promontory 285 feet high. From this point, gentle to precipitous hills line most of the coast 3½ miles northwestward to the entrance to Kwangnyang-man (Kwan-yon Kan), a bay filled with drying mud flats. There is a short beach (beach area (297)) in this stretch. The eastern coast of Kwangnyang-man is covered by a series of salt pans. The northern entrance to the bay is formed by the tip of a slender peninsula 3 miles long; a beach (beach area (297)) lines the tip of the peninsula. Another beach, fronted by a mud flat, lies around an indentation on the west side of the peninsula. The coast in the remainder of the subdivision consists of a plain interrupted by many low rolling hills; it is fringed by a drying mud flat about 3 miles wide. Except for a few small irrigated rice fields and several groves of coniferous trees, this area is largely uncultivated.



FIGURE IV - 169. West coast, Chinnamp'o.

View southeastward from hills north of city, showing terrain around port area (Chapter VI). September 1904; much new construction has occurred since photograph was taken. Approximate position 38° 43'N, 125° 24'E; U.S.H.O. chart 3236.

(2) Landing beaches.

TABLE IV - 54

LANDING BEACHES OF COASTAL SUBSECTOR 44 B
Reliability FAIR. (PLANS 31 and 32)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(291) Ch'o-do. (PLAN 32)	Generally clear; sand flat fronts beaches.	Pocket beaches; max. 1 mi.	25 to 50 ft.	1 on 10.	Surf heavy on W; light on E.	Sand and pebbles.	Steep hill slopes except for small flat near I-dong.	Trails.
(293) Vicinity of Pip'a-got. (PLANS 31 and 32)	W and N beaches partly obstructed; E fronted by drying flats.	4 beaches; max. 2 mi.	25 to 50 ft.	1 on 10.	Surf moderate on W and N; light on E.	Sand.	Narrow valleys and steep hills of rough peninsula.	Trails lead inland; main road 8 mi.
(294) Sok-to. (PLANS 31 and 32)	Partly obstructed; fronted by mud flats.	3 beaches; average 0.3 mi.	25 to 50 ft.	1 on 10.	Surf moderate.	Sand and pebbles.	Narrow valleys of rough hilly island.	Trails.
(295) Vicinity of Sohae-ri and Koam-ni. (PLAN 31)	Approach channeled; partly obstructed; fronted by wide mud flats.	10 beaches; max. 2 mi.	15 to 25 ft.	1 on 15.	Surf light.	Sand.	Small sandy flats or steep valleys enclosed in hills.	Trails connect to main road at head of bay.
(296) SW of Chinnamp'o. (PLAN 31)	Approach channeled; beaches fronted by mud flats.	7 beaches; max. 1.4 mi.	15 to 25 ft.	1 on 15.	Surf light.	Sand.	Steep hill slopes and narrow steep valleys; narrow N-S sand flat behind E part of E beach.	Trails except at E end where main road runs S; Chinnamp'o accessible only by roundabout route over narrow roads; probable airfields on south side of river (Ch. XIV).
(297) SW of Kwangnyangman. (PLAN 31)	Approach channeled; fronted by wide sand and mud flats.	5 mi., interrupted by rocky points and short stretches of rocky shore.	15 to 25 ft.	1 on 10.	Surf heavy with W winds.	Sand, pebbles, and mud.	Low, gently rolling sandy peninsula.	Trail leads down axis of peninsula, connecting beach with main road to N; main road leads to Kwangnyangman and Chinnamp'o.



FIGURE IV - 170. Coastal subsector 44 C.
Beach areas are shown on PLANS 31 and 33.

C. Coast west of Taeryong-ni to P'yongwon-gun - Kangso-gun boundary.

(38°51'N, 125°10'E; 39°13'N, 125°20'E)

(PLANS 31 and 33; FIGURE IV-170; U.S.H.O. charts V3-33 and 3236)

(1) Coast.

The underwater gradient off this coast is irregular. The large tidal range results in a broad expanse of tidal mud and sand flats. A series of sand bars lies off shore along most of this subsector.

The coastal terrain of the southern half of this subsector consists of an undulating coastal plain on which are low rolling hills backed about 5 miles inland by precipitous, highly dissected hills. The northern part is bordered by low to precipitous hills which reach the coast; in several places, this stretch is lined by cliffs and bluffs.

The valleys and coastal plains are largely cultivated in rice. The hills have a sparse growth of coniferous and deciduous trees.

1

This entire subdivision is fronted by tidal flats about 5 miles wide. The inner half of these flats generally consists of mud, while the outer half is composed of sand. Several groups of salt pans are located on the flats. Beyond the flats is a broad extent of sand bars extending several miles off shore. These sand bars are separated from each other by relatively deep channels.

In general, the coastal area is composed of an undulating coastal plain on which there are low rolling hills backed by precipitous hills reaching a maximum elevation of about 1,800 feet.

The southern $1\frac{1}{4}$ miles is a coastal plain about $1\frac{1}{2}$ miles wide, the western $\frac{1}{4}$ mile of which is marshy. Behind the coastal plain are low hills. Except for the uncultivated marshy strip, the coastal plain is planted in irrigated rice. This stretch terminates at the estuary of a small stream. About $2\frac{1}{2}$ miles west of the estuary is Namjoap-to (Chamap-to on PLAN 31; Nanjogafu To on U.S.H.O. chart 3236), a cliff-lined islet reaching an elevation of 197 feet. Northward of the estuary is a 4-mile stretch of coastal plain about 6 miles wide backed by steep hills. This plain is fronted by a sandy shore and is planted in irrigated rice.

The next stretch is a $1\frac{1}{2}$ -mile strip of uncultivated coastal plain about $\frac{1}{2}$ mile wide and backed by a ridge of steep hills. For $\frac{1}{4}$ mile beyond, the shore is lined by a rather precipitous hill; immediately northward is a stretch of coast 1 mile long with a coastal plain $\frac{1}{2}$ mile wide backed by low hills. The next stretch, $\frac{1}{2}$ mile long, is backed by hills which terminate at a point about 100 feet high, forming the south entrance point of the estuary of the Ponghwang-p'o (Hoam Po). At the head of the estuary is a $\frac{1}{2}$ -mile stretch of coastal plain, about $1\frac{1}{2}$ miles wide, backed by low hills and planted in irrigated rice.

2

The coastal area of this irregular stretch is generally backed by rolling to precipitous hills. It is fronted by tidal flats about 4 miles wide, the inner half consisting of mud, the outer half being composed of sand. Numerous sand bars lie off shore. A beach (beach area (298), TABLE IV - 55) about 2 miles long borders the southernmost promontory; it is backed by a marshy coastal plain about 2 miles wide. A slender headland just northward of the above promontory is edged by a beach $1\frac{3}{4}$ miles

long, which is backed by a flat coastal plain. In the small inlets on the north and south sides of the headland, there are groups of earth-diked salt pans which are also partly edged by beaches. A flat, somewhat marshy coastal plain backed by rolling hills extends 3 miles northward of the promontory to the bay of Nam-p'o (Nam Po on U.S.H.O. chart 3236).

Nam-p'o has groups of salt pans on its southeastern and northern shores; on its northern shore, a marshy plain fronts low hills. The bay is filled with mud flats. A small beach (beach area (298)) is located about midway along the north shore. The valleys of the streams which empty into Nam-p'o are cultivated in irrigated rice. The cliffy islet, Pukchoap-to, (Puchogapu To; Pukch-so on PLAN 33), 182 feet high, lies in the mouth of the bay. The coast of the small cape which forms the northern entrance point of the bay is marshy, and is backed by low hills.

In the bay northward of this headland, there is a group of earth-diked salt pans on the narrow plain fronting low, rolling hills. A small triangular beach (beach area (298)) westward of these salt pans is separated from another beach area by a small cliffy cape, Hajon-do (Hasaru Somu). The latter sand beach, interrupted near its northern end, forms the western coast of a stubby promontory backed by low, rolling hills. The northern shore of this peninsula is edged by a sand beach 1 mile long, bordering low hills; it forms the south shore of the small bay, Chaeil-p'o (Cheip Po). The bay's eastern coast is backed by a strip of marsh on a narrow coastal plain fronting low hills.

A small jutting cliffy peninsula forms the northern boundary of Chaeil-p'o; it has a small beach (beach area (298)) on its southern shore. A continuous beach $2\frac{1}{2}$ miles long extends along the northwestern and entire eastern shores of the peninsula. This beach forms the western and southern shores of a bay; in the northeastern corner of this bay, earth-diked salt pans are backed on the northwestern side by marshes. North of this bay, a cliffy promontory extends to the estuary forming the boundary between P'yongwon-gun and Kangso-gun. Two short beaches fronting steep cliffs form the northern part of this stretch.

The valleys and narrow coastal plains are cultivated in irrigated rice fields. There are scattered groves of deciduous and coniferous trees on the hills.

(2) Landing beaches.

TABLE IV - 55
LANDING BEACHES OF COASTAL SUBSECTOR 44 C
Reliability FAIR. (PLAN 33)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(298) Vicinity of Hanch'on.	Fronted by wide sand and mud flats; partly obstructed.	Many beaches; max. $2\frac{1}{2}$ mi.	15 to 25 ft.	1 on 15.	Surf moderate; wide belt of surf.	Sand and pebbles.	Narrow beaches front hilly headlands and marshy plains of irregular coast.	Trails connect to main road which roughly parallels coast 1 to 5 mi. inland, passing through Chungsan and Hanch'on.

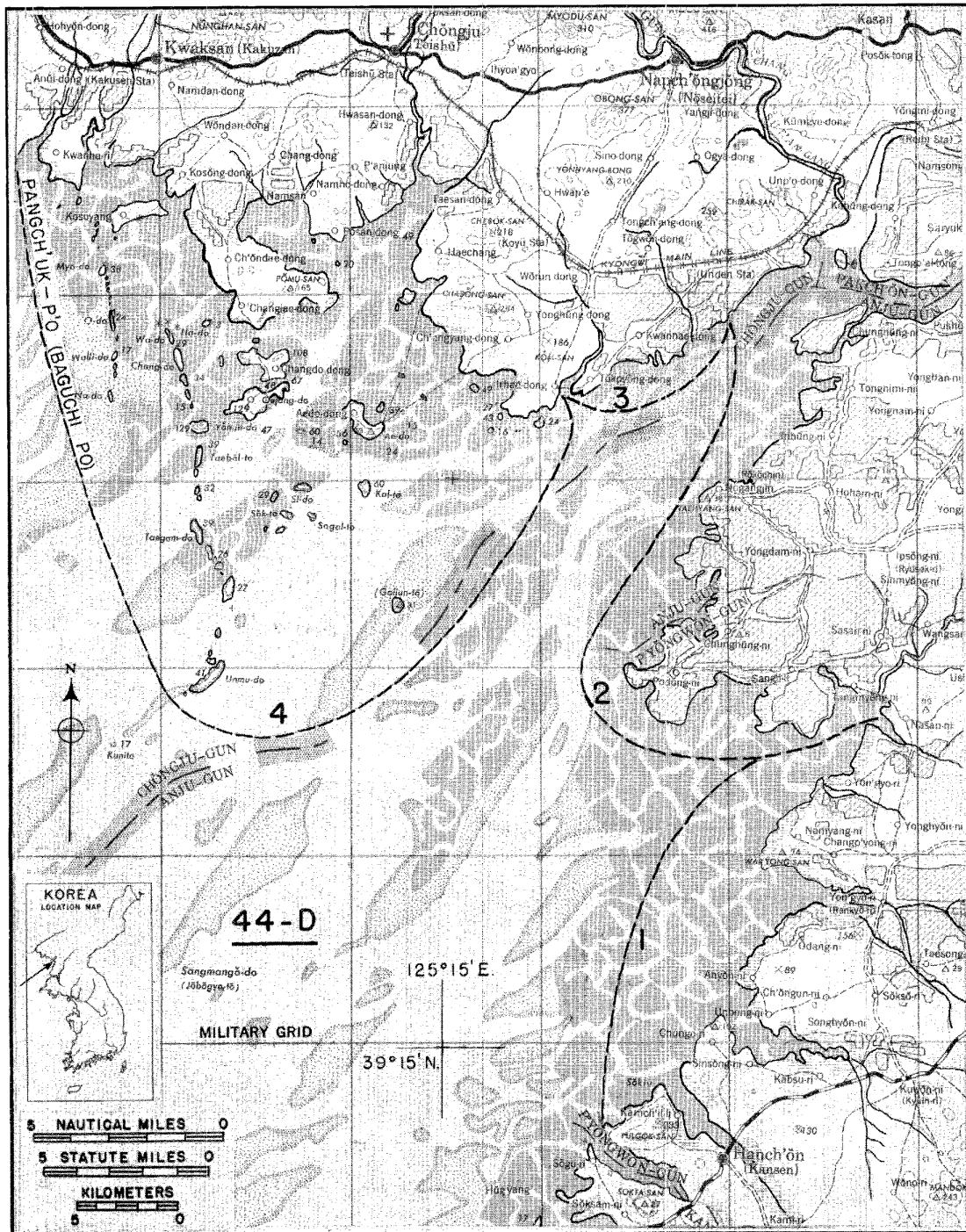


FIGURE IV - 171. Coastal subsector 44 D.
Beach areas are shown on PLAN 33.

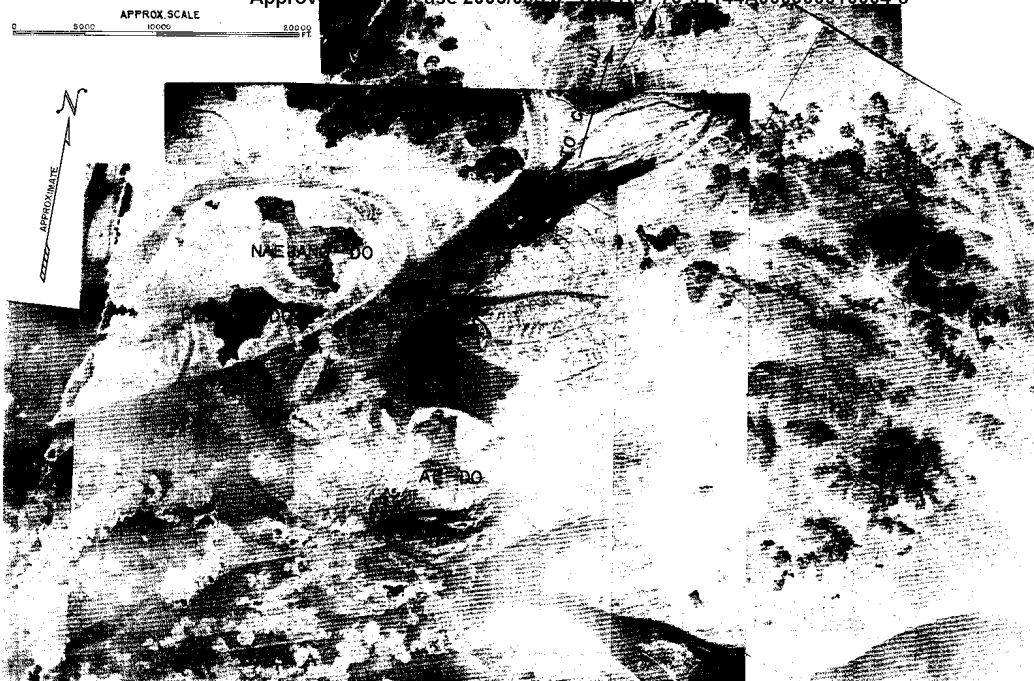


FIGURE IV-172. (U.S. Coast Guard, Bees area, 1991).
Coast 8 to 13 miles west of the mouth of the Yangtze River, showing islands lying off the coast south of the town of Chongqing. Note short
irregular beehives on islands and some beehives on mud flats. White material in water is debris. Approximate position of Ye-de-yan (Ye-
de-yan) (U.S. Coast Guard V-55) 30° 42'N, 105° 15' E; U.S. Coast Guard V-55 (A.F. 10000/10000) dated December 1991.

D. P'yongwon-gun - Kangso-gun boundary to Pangch'uk-p'o (Baguchii Po).

(39°13'N, 125°20'E; 39°39'N, 125°00'E)

(PLAN 33; FIGURE IV - 171; U.S.H.O. charts V3-33 and 3236)

(1) Coast.

The underwater gradient off this subsector is irregular. The large tidal range results in a broad expanse of tidal mud and sand flats. Sand bars lie off most of the coast.

The coastal terrain consists of hills, rolling to precipitous, which alternate with stretches of coastal plain. The coastal plain is of varying width, marshy in places, and is backed by a range of precipitous hills. Where the hills reach the coast there are many cliffs and bluffs broken in places by alluvial plains where small streams enter the ocean.

The coastal plain and valleys are cultivated in irrigated rice. The hills have a cover of deciduous and coniferous trees including considerable amounts of scrub pine.

1

This coastal subdivision is backed by low, rolling hills which average about 300 feet high. Tidal flats front the entire stretch, the inner part consisting of mud, and the outer part of sand. Detached sand and mud bars lie off shore.

The hilly peninsula which projects immediately northward of the boundary between P'yongwon-gun and Kangso-gun has a cliffy point on its southwestern extremity and 3 small stretches of cliff on its northwestern coast. The northeastern coast of the peninsula forms the southwestern shore of the Hanch'on-p'o (Hanchom Po on U.S.H.O. chart 3236). The banks along the Hanch'on-p'o estuary are generally flat and marshy, but 2 small beaches (beach area (298), TABLE IV - 55) lie along the northeast shore. The south coast of another hilly peninsula forms the northeast shore of the estuary. There are 3 beaches on the southwest coast of the peninsula; 3 other small beaches lie at the peninsula's northern tip, which is the southern entrance point of Chinbang-p'o (Chimbagu Po). About a mile to the southeast of the point, a small triangular beach tips a slightly projecting cape.

Except for these beaches, the banks of the Chinbang-p'o estuary are flat and marshy. The northern entrance point of the estuary is a beach $\frac{3}{4}$ mile long, backed by low rolling hills. The remainder of the subdivision is hilly and lined with marshes. Extensive irrigated rice fields line the stream valleys. Scattered groves of coniferous and deciduous trees lie on the hills.

2

This subdivision extends to the north shore of the estuary into which flow the Ch'ongch'on-gang and the Taeryong-gang. The coastal area is a flat plain bordered by marshes. The plain extends inland as much as 5 miles; it is backed by rolling hills. The entire coast is bordered by tidal flats which consist predominantly of mud, but which are fringed by sand in a number of places; the offshore part is lined with sand bars. Parts of the tidal flats are used for salt pans. The coastal plain is protected from the ocean by an extensive system of dikes. Mud and sand flats likewise block much of the estuary at the north end of the subdivision. A small island lies at the point at which the

Taeryong-gang enters the estuary. The entire coastal plain is extensively cultivated in irrigated rice.

3

A coastal plain, which reaches a maximum width of 3 miles, is backed by precipitous highly dissected hills throughout this subdivision; sandy stretches front the plain. Off shore, there are narrow mud flats, beyond which is an extensive system of sand bars. The coastal plain is intensively cultivated in rice.

4

Precipitous hills are cut by numerous small streams and ravines in this subdivision. Small, marshy, alluvial plains occur at the points where the streams enter the ocean. The entire shore is bordered by extensive mud flats, beyond which are sand bars and numerous rugged, cliff-lined islands (FIGURE IV - 172), averaging 150 feet high. A few salt pans lie on the mud flats.

The eastern end of the subdivision is lined by a series of beaches (beach area (299), TABLE IV - 56), which are backed by a flat, somewhat marshy plain. A hilly area lying inland of the plain reaches its maximum elevation at Chasong-san (Chonchoku San), about 800 feet high. About 2 miles west of Chasong-san, 2 small beaches line the shores of a small bay; a cliffy island is located off the bay's mouth. The coastal plain, backed by rolling hills, extends immediately northwestward to the estuary of the Talch'on-gang (Tarure Kagu); the shores at the head of the estuary are marshy. Rolling hills extend westward about 2 miles from the estuary to another bay, the head of which is lined by a narrow, marshy coastal plain backed by steep hills. A hilly peninsula, reaching heights of more than 600 feet, forms the southwest side of this bay. The south end of the peninsula has several stretches of cliff, and has small beaches on its southern and southwestern coasts.

South of this peninsula is a group of rugged, cliff-lined islands; one of the largest, Naejang-do (*Nai-sho-tō*), lies about $\frac{1}{2}$ mile south of the peninsula, and is 358 feet high. Most of the island is fronted by cliffs. There is a small beach (beach area (299)) on the eastern shore, and beaches line the north and south sides of the isthmus separating the two parts of the island. South of Naejang-do is Oejang-do (*Gai-sho-tō*), an island which is largely lined with cliffs; a small beach lies on the northwest coast, 2 on the south coast, and the isthmus connecting the 2 parts of the island is lined by a beach. Two miles east-southeast of Oejang-do is Ae-do (*Gai-tō*), a cliff-lined island 238 feet high; small beaches lie midway on the east and west shores, and on the south of this island. Southward of Ae-do are a number of small, rugged, cliff-lined islets. Westward of Oejang-do is a chain of islands, Soham-song-yolto (Sho Kanjo Retto on U.S.H.O. chart V3-33), which extends in a north - south direction about 11 miles. These islands are hilly, rugged, and cliff-lined.

The northwestern end of the peninsula lying northward of Naejang-do (*Nai-sho-tō*) consists of a rolling, somewhat marshy plain which extends to the head of a bay. This bay is fronted by an island, the western portion of which is lined by a series of discontinuous beaches (beach area (299)). The flat, marshy coast extends westward to another small bay, Pang-

ch'uk-p'o (Baguchii Po; Bochiku Ho on U.S.H.O. chart V3-33), the eastern and western shores of which are lined by beaches.

The coastal plains are planted in irrigated rice. The hills have a sparse cover of scrub pine and deciduous trees.

(2) *Landing beaches.*

TABLE IV - 56
LANDING BEACHES OF COASTAL SUBSECTOR 44 D
Reliability FAIR. (PLANS 33 and 34)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(299) S of Chongju and Kwaksan. (FIGURE IV - 172)	Approach channeled; beaches fronted by mud flats.	Many beaches; average 0.5 mi.	15 to 25 ft.	1 on 15.	Surf moderate; wide belt.	Sand and pebbles; beaches on N side of islands soft.	Steep hill slopes or small swampy flats enclosed by steep hills; some of beaches shown may be replaced by dikes.	Islands connected to mainland by ferries; trails lead inland from mainland shore through alternate narrow valleys and small flats to R.R. and highway 3 to 5 mi. inland; minor air facilities at Chongju (Ch. XIV).

E. Pangch'uk-p'o (Baguchii Po) to Agang-got (Gako Kan).

(39°39'N, 125°00'E; 39°50'N, 124°32'E)

(PLAN 34; FIGURE IV - 173; U.S.H.O. charts V3-33 and 3236)

(1) *Coast.*

The approach to the islands of this subsector is much obstructed close-in by sand bars and shoals. The islands and shoals form obstructions to the approach to the mainland. The coasts of the mainland and islands are generally fronted by mud flats; the channels which lead through the island group are shallow, and disappear in the mud flats.

The greater part of the mainland coast is low and separated from the inland hills by a narrow cultivated strip. The coasts of the islands and of the southern part of Ch'olsan-pando (Chorusan Peninsula on U.S.H.O. chart 3236) are steep. Some low, rolling hills appear in the eastern part of the subsector and near the northwest end, but generally the hills backing the coast both on the mainland and on the islands are high and steep. There are a few small stretches of sand, and some cliffs.

1

The eastern end of this subdivision is high and cliff-bound, except for a short beach (beach area (299), TABLE IV - 56) which lines a small indentation. Hills and small patches of cliffs also appear on the ends of a few other promontories, but the coast generally is low, and a large part of it is diked. Low cultivated ground is located between the water line and the hills along most of this subdivision. The Tongnae-gang and the Pogang-ch'on, located near the center of this stretch, have broad cultivated valleys which widen into considerable coastal plains extending along the coast from the river mouths. The hill slopes are generally grassy, but there are scattered groves of scrub pine.

2

Sinmi-do (Shimmi To on U.S.H.O. chart 3236) is a large, rugged, deeply indented island composed of precipitous hills which largely rise directly from the coast; the hills reach their peak on Unjong-san (Unjogu San), 1,737 feet high, near the center of the island. Broad tidal flats surround the island. The flats are mud, except for those around the southern tip, which are sand; they reach a maximum width of 2½ miles along

the northwest coast. Sand bars lie off the flats. Several small beaches (beach area (300), TABLE IV - 57) are located in the many inlets along the western coast.

There is little cultivation. The hills are generally covered by deciduous trees, although some of the slopes are grass-covered.

Several islets lie off the northern and western coasts. They are rugged, precipitous, uncultivated, and generally surrounded by mud or sand flats. Honggon-do (*Kyōken-tō*), 295 feet high, lying off the northern extremity of Sinmi-do (Shimmi-to), is covered with coniferous and deciduous trees. Ch'uk-to (*Chikū-tō*), located westward of the south tip of Sinmi-do, is precipitous and uncultivated.

3

This coastal subdivision is bordered by tidal mud flats. The eastern part consists of the estuary of the Ch'ong-gang. The eastern shore and head of the estuary are diked and cultivated. The Ch'olsan-pando (Chorusan Peninsula) consists of precipitous hills extending to the coast; the highest peak is Chu-san (Pei San), elevation 1,238 feet, on the southwestern side of the peninsula. There are numerous short stretches of cliffed coast.

Along the northwestern shore of the estuary there are 2 small beaches (beach area (301)). This shore is bordered by a coastal plain, which is backed by precipitous hills. Several tiny islets lie in the estuary. The southeast shore of the peninsula is indented by 3 bays, Koman-p'o (Kengan Ho on U.S. H.O. chart V3-33), Tongch'ang-p'o (Toso Ho), and Yunsong-p'o (Injo Ho). This entire stretch is backed by precipitous, dissected hills. The shores of Yunsong-p'o (Injo Ho), the southern of the 3 bays, are bordered by a long beach (beach area (301)). About 2½ miles southwestward of this beach, the hilly area continues to the village of Sonam-dong, which is located at the head of a small bay and is fronted by a short beach. Three small hilly islets lie eastward of this stretch; they are surrounded by an elongated, detached sand bank.

From Sonam-dong to Yongsap'o, 3 miles southwestward, the coast is hilly. Fronting the southernmost extremity of Ch'olsan-pando (Chorusan Peninsula) is a small beach (beach area (303)). The entire southern portion of the peninsula consists of precipitous hills. A small beach also lies at the head of the southernmost inlet of the steep west coast. The precipitous coast extends 2 miles northward to another small beach, which

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COASTS AND LANDING BEACHES

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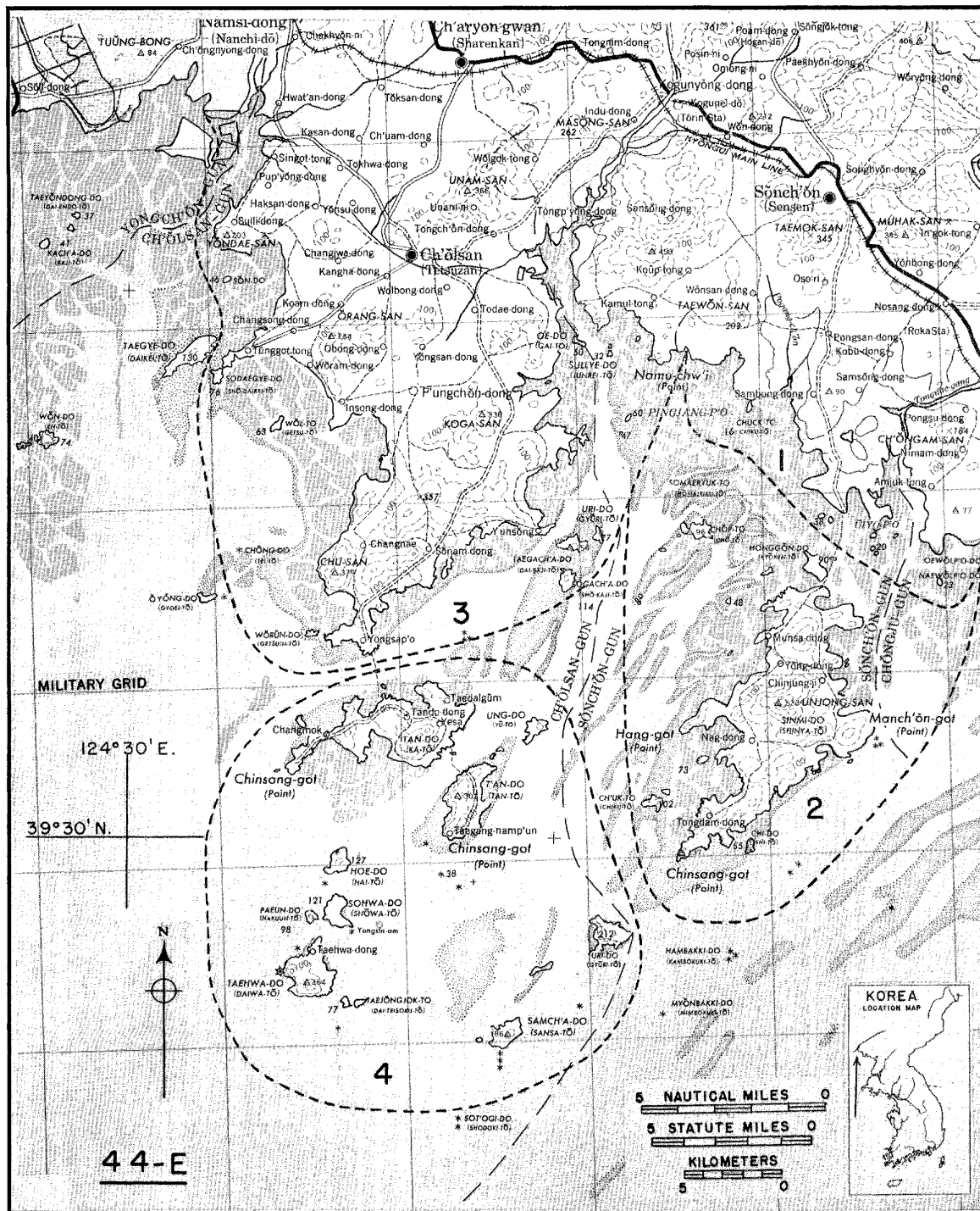


FIGURE IV - 173. Coastal subsector 44 E.
Beaches are shown on PLAN 34.

is bordered on the north by a stretch of cliffs backed by steep hills. Along the shore of the inlet northward of the cliffy stretch, there are 2 additional small beaches fronting a narrow coastal plain backed by steep hills. Another bay indents the coast northwestward of these beaches; most of its head is lined with beach. The bayhead beach is backed by a narrow coastal plain fronting rolling hills which terminate in a peninsula trending to the southwest. Two islets, Wol-to (*Getsu-tō*), 208 feet high, and Sodaegye-do (*Sho-daiki-tō*), 250 feet high, lie southwestward of this beach.

Northward of the beach, hills line the coast as far as Yondae-san, a 650-foot hill which rises sheer from the sea. Northward of Yondae-san is a narrow, marshy coastal plain backed by rolling hills; much of this plain has been diked and put under cultivation. Salt pans lie along the shore at the end of the subdivision.

4

The islands in this subdivision largely are surrounded by mud and sand flats. The largest island, Ka-do (Tan-do (*Ka-tō*) on PLAN 34; Kaa To on U.S.H.O. chart 3236), consists of precipitous hills which extend to the shore; they reach a maximum elevation of 1,088 feet. Tidal mud flats lie off the north and south sides of the island; the flats on the northwest and southwest sides are composed of sand. A sand beach (beach area (302)) 1 3/4 miles long extends along the west end of the south coast. The island is uncultivated; its slopes are covered with deciduous trees. Ung-do (*Yū-tō*), 1 1/2 miles east

of Ka-do, is a barren precipitous islet, 528 feet high, and is uncultivated.

T'an-do (Tan To), 992 feet high, consists of precipitous hills. Its slopes are uncultivated, and covered with deciduous trees. Two small uncultivated islets lie just northward of T'an-do. The shoal which extends southwestward from the southernmost extremity of T'an-do connects this island with Sohwa-do, an islet 397 feet high, and Pagun-do (Paeun-do on PLAN 34), an islet just westward of Sohwa-do. Hoe-do (Ho Yuma) lies just northward of Sohwa-do. These 3 cliffy, hilly islands are nearly surrounded by tidal flats; the hills are uncultivated, and are covered in some places with deciduous trees.

Tachwa-do (Teifa To), 871 feet high at its summit, is also precipitous and uncultivated; it lies just south of Pagun-do. Tachwa-do (FIGURE IV - 174) is surrounded by sand flats; its slopes are covered with deciduous trees. The southwest coast and part of the south coast are cliffy. There are beaches (beach area (302)) on the island's northern tip, and on the west and east coasts. Three small uncultivated islets lie immediately off the southeast coast of Tachwa-do. About 5 1/2 miles eastward of Tachwa-do, are 2 small uncultivated islets. The northernmost of these is Uri-do (Uricha), 694 feet high; it has a small beach on its west coast. Samch'a-do (Chamuzaa), 605 feet high, lies southwestward of these two islets. It is surrounded by a sand flat, and several rocks lie off its coast.

(2) Landing beaches.

TABLE IV - 57
LANDING BEACHES OF COASTAL SUBSECTOR 44 E
Reliability FAIR. (PLAN 34)

NUMBER AND LOCATION OF BEACH AREA	NEARSHORE	LENGTH	WIDTH ABOVE H.W.	GRADIENT IN H.W. ZONE	SURF AND SHORE DRIFT	MATERIAL AND FIRMNESS	TERRAIN IMMEDIATELY BEHIND BEACH	CONNECTIONS INLAND
(300) W coast of Sinmi-do.	Approach channeled; fronted by wide flats.	Many short beaches; max. 0.5 mi.	15 to 25 ft.	1 on 15.	Surf light.	Sand, pebbles, and mud.	Steep hill slopes or steep narrow valleys of mountainous island.	Trails skirt shore; connect to mainland by ferry.
(301) SE of Ch'olsan.	Fronted by mud flats; many obstructions near shore.	6 beaches; longest 1 mi.	15 to 25 ft.	1 on 15.	Surf light.	Sand and pebbles; scattered boulders.	Steep hill slopes.	Unimproved road and trails lead inland over hills to Ch'olsan.
(302) Ka-do, Sohwa-do, Tachwa-do, and Uri-do. (FIGURE IV - 174)	Fronted by drying flats; many obstructions near shore.	Short beaches; average 0.5 mi., max. 1.4 mi.	15 to 25 ft.	1 on 10.	Surf moderate.	Sand and pebbles; scattered boulders on shortest beaches.	Steep hill slopes.	Trails.
(303) SW of Ch'olsan.	Partly obstructed; fronted by wide mud flats.	6 beaches less than 1 mi.; 1 beach 2.4 mi.	15 to 25 ft.	1 on 15.	Surf moderate.	Sand.	Small flats in rice backed by hills.	Trails and poor roads lead inland over hills to Ch'olsan.

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COASTS AND LANDING BEACHES

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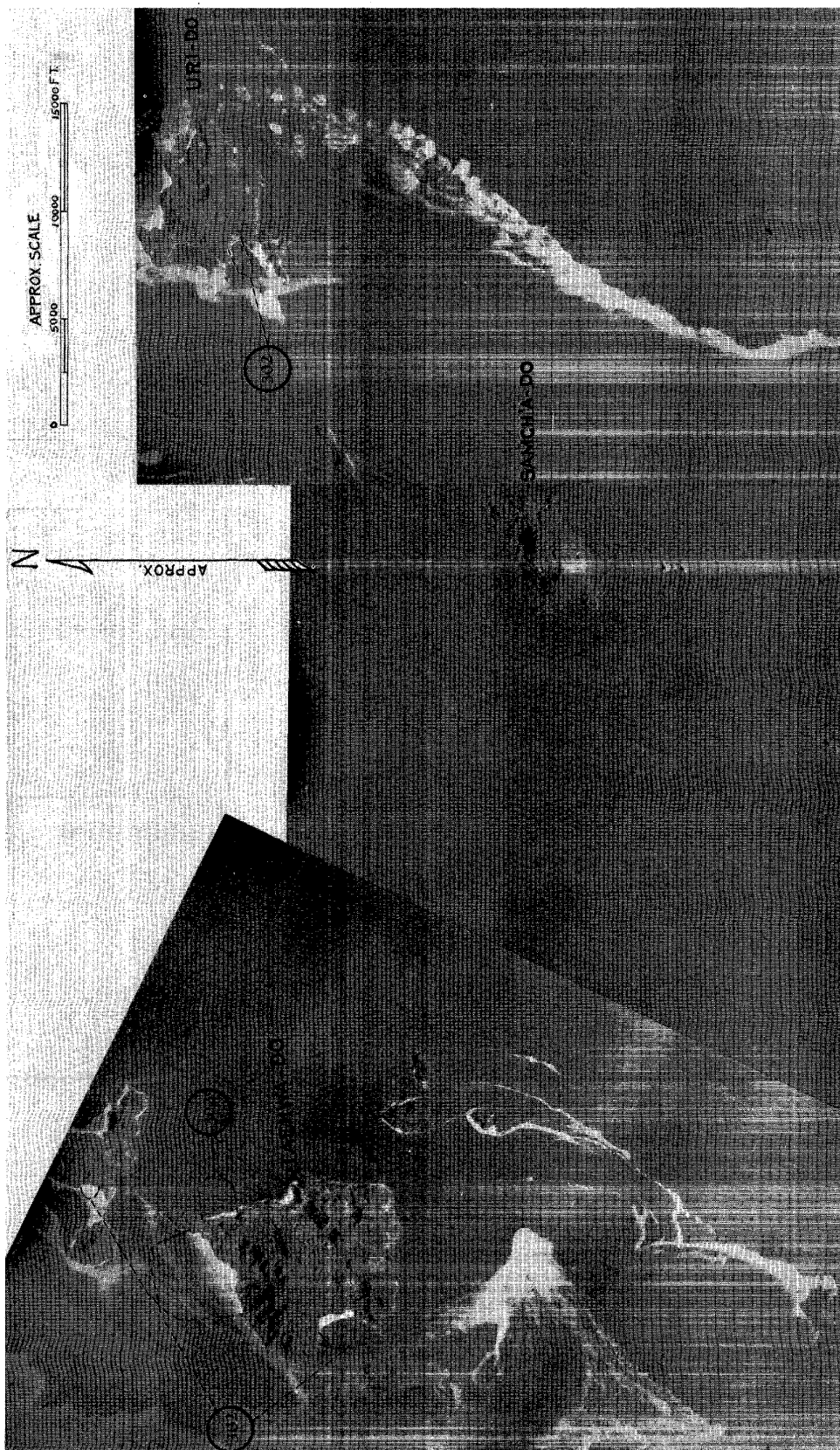


FIGURE IV - 174. West coast. Beach area (302).
Islands south of Ch'olsan-pando (Chorusan Peninsula), showing characteristic steep, hilly terrain of islands off Korea. Sreak extending south from Uri-do apparently is drift ice. Approximate position of Sanchi-do (Chamuzaa on U.S.H.O. chart 3236), 39°25'N, 124°43'E; U.S.H.O. chart 3236. A.A.F. 468BG/4MR32, dated 13 December 1944.

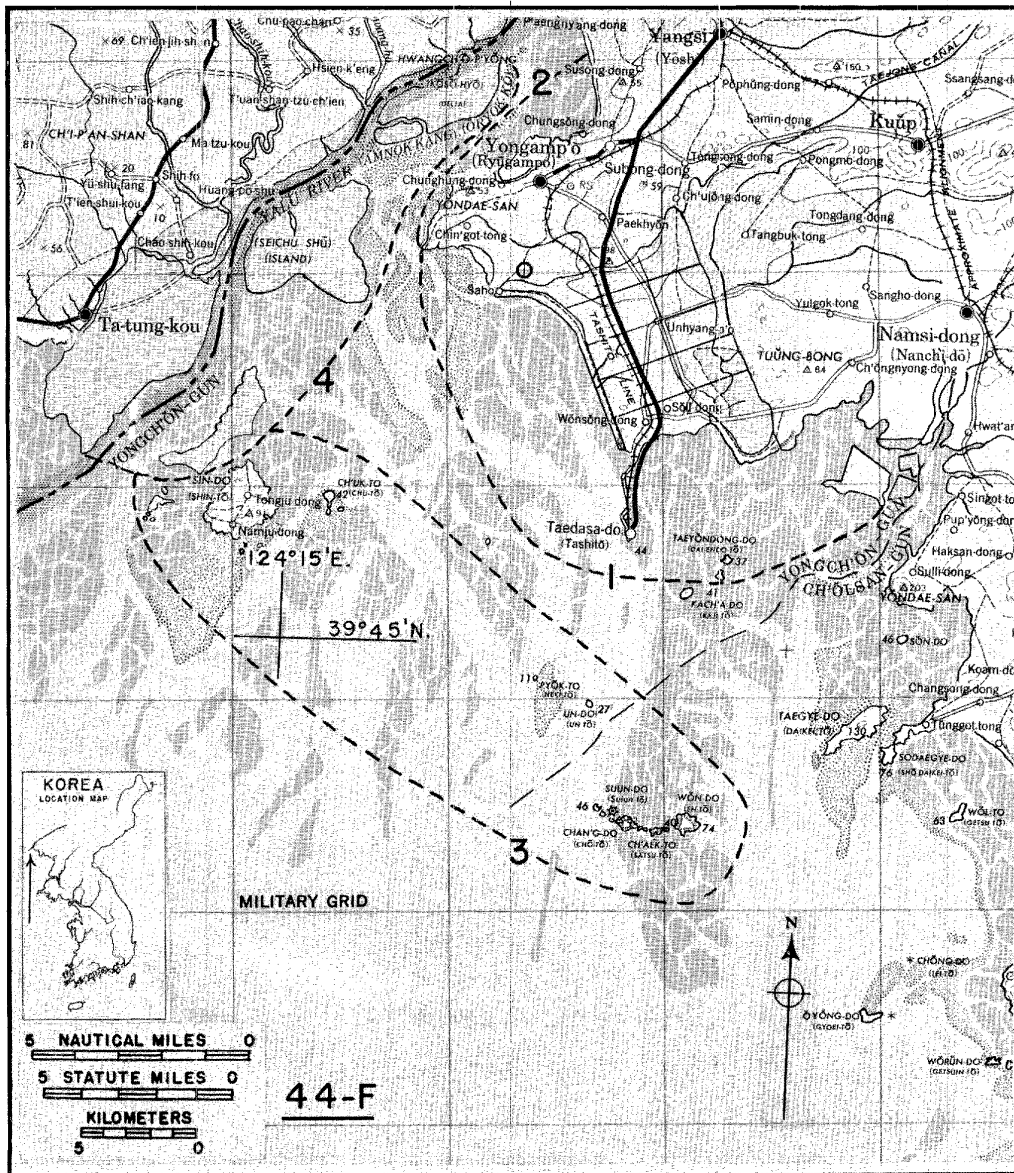


FIGURE IV - 175. Coastal subsector 44 F.

This figure and PLAN 34 apparently are incorrect in showing a road and railroad extending from the mainland to the island of Taedasa-do (39°48'N, 124°24'E); available information indicates that the transportation facilities reach only to Sodasa-do, about 1¼ miles north of Taedasa-do. No beach areas described.

F. Agang-got (Gako Kan) to Yalu River.

(39°50'N, 124°32'E; 39°49'N, 124°08'E)

(PLAN 34; FIGURE IV - 175; U.S.H.O. charts V3-33 and 3236)

(1) Coast.

The underwater gradient of this subsector is irregular. The large tidal range results in a broad expanse of mud and sand flats; a series of sand bars lies off shore. Several islands lie off the coast and in the estuary of the Yalu River.

The coastal terrain consists of alternating areas of low hills and of flat coastal plain backed by hills. Some parts of the

coastal plain are marshy. Where the hills reach the coast, there are short stretches of bluffs and cliffs. Part of the coastal plain is protected by dikes.

The hilly area has a sparse cover of coniferous trees. The valleys and coastal plain are planted in rice, except that certain of the marshy portions are covered with reeds.

1

This entire subdivision is fronted by broad tidal flats. Beyond the flats, sand bars extend several miles off shore; the bars are separated by relatively deep channels.

In general, the coastal area is composed of a plain on which there are several groups of low, rolling hills. The easternmost

2-mile stretch is a flat coastal plain; for a mile to the west, hills descend to the coast in cliffs. Southwest of the cliffs is a mile of marshland which is protected by dikes. About 1¾ miles west-southwestward of the marshy area is Kwakkot-ch'oe (Kakukan Shi on U.S.H.O. chart V3-33); this stretch is backed by low, rolling hills covered with coniferous trees.

Two miles south of Kwakkot-ch'oe (Kakukan Shi) is Taedasa-do (*Daitasa-tō*), an island 132 feet high; between the two is a smaller island, Sodasa-do, connected to the mainland by a road and railroad (Chapter VI; incorrectly shown on PLAN 34). There is an airfield at the town of Tashito (Chapter XIV). The bay north-northeast of Taedasa-do, known as Dasado, has been developed as a port (Chapter VI), and is reported to have naval facilities (Chapter XIII); the bay is believed to have been dredged. Two miles east of Taedasa-do is Taeyondong-do (*Dai-ondō-tō*), an island 98 feet high. South of the latter island is Soyondong-do (*Sho-ondō-tō*), a small islet 102 feet high. South of Soyondong-do is Kach'a-do (*Kaji-tō*), 132 feet high. Five miles southeast of Kach'a-do is the island of Taegye-do (*Daikēi-tō*), about 400 feet high.

The coast trends northwestward from Kwakkot-ch'oe (Kakukan Shi) about 5 miles to a hilly promontory. This stretch is a flat dike-protected coastal plain, which is backed about 1 mile inland by a few low, rolling hills. Northwest of the promontory is a flat, dike-protected, reed-covered coastal plain, about 2 miles long.

2

This subdivision forms the east shore of the estuary of the Yalu River, the boundary between Korea and Manchuria. The coast is largely fronted by mud flats; several sand bars lie in the estuary.

In general, the coastal area along the estuary is composed of low, rolling hills which in places reach the coast as cliffs, and in other places are bordered by a narrow coastal plain. The southern part consists of a reed-covered coastal plain, about 300 yards wide, backed by rolling hills. Beyond this stretch, the rolling hills line the eastward-trending coast for 1½ miles to the town of Yongamp'o (*Ryūgampo*); the town has port facilities (Chapter VI). Much of this stretch is lined with cliffs.

From Yongamp'o, the coast trends 3 miles northward to the normal channel of the Yalu River. This stretch consists of a rice-covered lowland protected by dikes; it is about 2¼ miles wide, and is backed by low, rolling hills.

Eight miles up the river is Sinuiju, a city (Chapter VIII) just across the Manchuria - Korea border from An-tung. Sinuiju has port facilities (Chapter VI) and air facilities (Chapter XIV).

3

This subdivision consists of several islands surrounded by tidal mud and sand flats; sand bars lie off the flats.

In general, the islands are rugged and precipitous. The eastern island group, Pansong-yolto (Banjo Islands on U.S. H.O. chart 3236) consists of 3 large islets and several smaller ones. The easternmost of the large islets, all of which are cliff-lined, is Won-do (*En-tō*), 243 feet high. West of Won-do is Ch'aek-to, 140 feet high. The westernmost islet is Chang-do (Cho To), 171 feet high.

The western island group consists of a large islet and 2 small islets. The easternmost islet is Ch'uk-to (*Chū-tō*), 138 feet high, which is surrounded by sand flats. The large islet, Sin-do (Shin To), is 302 feet high; its southern coast is surrounded by sand flats, and the remainder of the coast by mud flats. A small islet lies off the west coast of Sin-do.

4

The deltaic deposits of the Yalu River lie partly on the Korean and partly on the Manchurian side of the border. On the Korean side these deposits are represented by 3 islands which are, from northeast to southwest, Hwangch'op'yong (*Kō-sō-hyō*), Sojung-ju (*Seichū-shū*), and Yongmungang (*Gei-monkō*). All these islands are surrounded by mud flats and are low, flat, marshy, and covered with reeds.

(2) Landing beaches.

(None described.)

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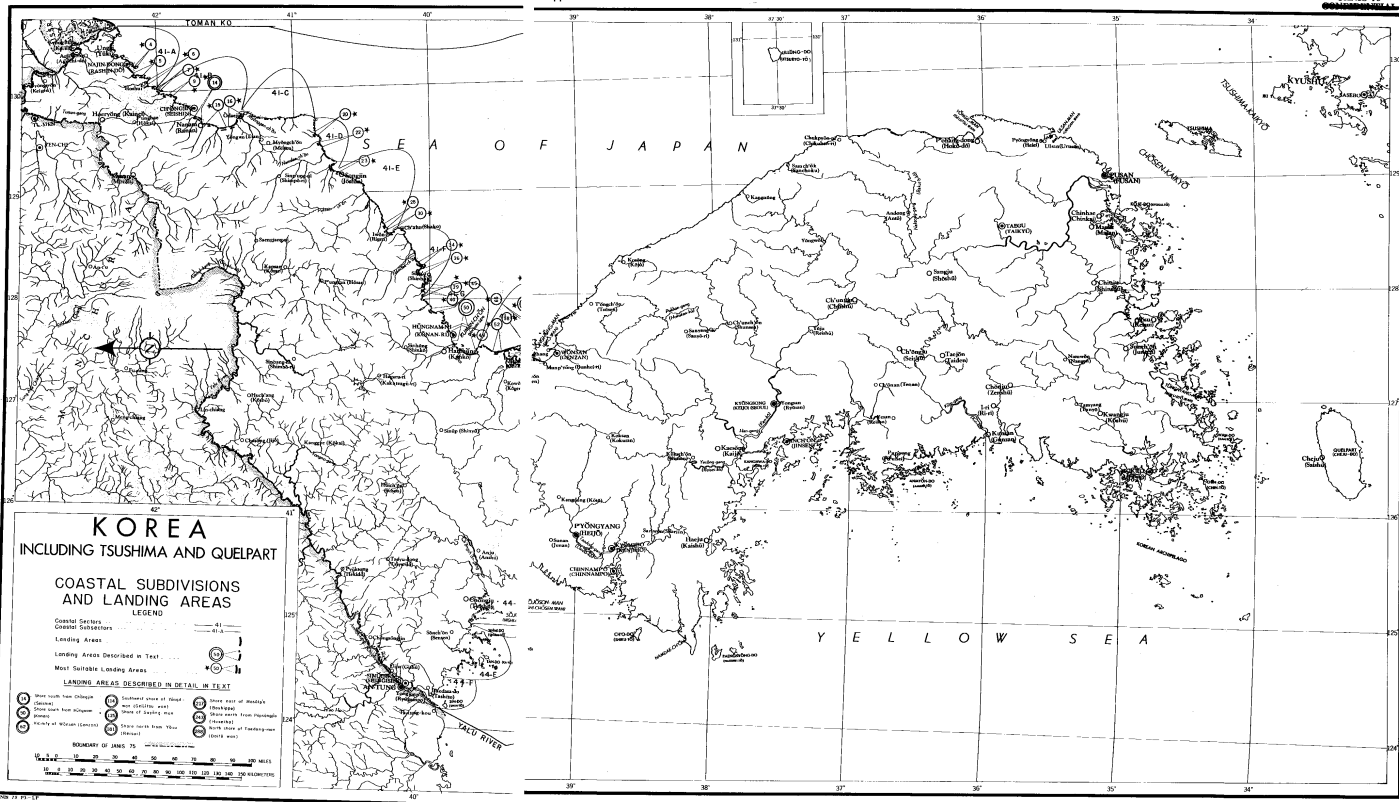
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